

Subject: **Request for Proposal**

Project: **Milwaukee County SRCCCY – CMAR REQUEST FOR PROPOSAL**

Project No.: **WS12401**

ATTACHMENT 6

SRCCCY PRELIMINARY DESIGN AND FEASIBILITY STUDY

Milwaukee County Secure Residential Care Center for Children and Youth (SRCCCY)

PRELIMINARY FACILITY DESIGN AND FEASIBILITY STUDY



Prepared by Continuum Architects + Planners, S.C.
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26 December 2018

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PREFACE

Summary of Programming and Planning Process

In July of 2018, Milwaukee County, Department of Administrative Services, selected a consultant team for professional consulting services to support the preliminary facility design of a Secure Residential Care Center for Children and Youth (SRCCCY).

Wisconsin Act 185, enacted in April 2018, relates to juvenile correctional facilities, and requires closure of currently State-run facilities in Lincoln Hills/Copper Lake by January 1, 2021. The Act allows for counties to establish Secure Residential Care Centers for Children and Youth (SRCCCY), and a Juvenile Corrections Study Committee is to be created by the State DOC to recommend rules for services and programming for SRCCCYs by September 2018 which is currently delayed till December 31, 2018. The Act creates a grant program to provide funding for construction of these facilities. A Grant Committee will be established by the State for the purposes of reviewing applications and awarding grants for the construction of county SRCCCYs - Grant applications are due to the State by March 31, 2019.

Following development of the Owner Project Requirements (OPR), the project team develop preliminary concepts to determine feasibility of renovating the Vel R. Phillips center to include the SRCCCY. This report summarizes those concepts. The consultant team was led by Continuum Architects + Planners, S.C.

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Abbreviations

ADA	Americans with Disabilities Act
A/E	Architect / Engineer
ANSI	American National Standards Institute
ASF	Assignable Square Feet: Space used by occupants for program functions
ASHRAE	American Society of Heating Refrigeration and Air Conditioning Engineers
ASTM	American Society for Testing and Materials
EFF	Efficiency Ratio
FC	Footcandle
FCC	Federal Communications Commission
FICM	Facilities Inventory Classification Manual
FTE	Full Time Equivalent
GFCI	Ground-Fault Circuit Interrupter
GSF	Gross Square Feet
HVAC	Heating Ventilating and Air Conditioning
IBC	International Building Code
LED	Light Emitting Diode
LTE	Limited Term Employee
MEP	Mechanical, Engineering and Plumbing
NC	Noise Criterion
NEC	National Electrical Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
psf	Pounds per Square Foot
RU	Rack Unit
SF	Square Feet
SRCCCY	Secure Residential Care Centers for Children and Youth
STC	Sound Transmission Coefficient
TBD	To be Determined
TPC	Total Project Cost
UL	Underwriters Laboratory
VAV	Variable Air Volume

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1. EXECUTIVE SUMMARY

1.1 General Project Description

The Primary Purpose for this project is to establish a Secure Residential Care Center for Children and Youth in Milwaukee County. Wisconsin Act 185, enacted in April 2018, relates to juvenile correctional facilities, and requires closure of currently State-run facilities in Lincoln Hills/Copper Lake by January 1, 2021. The Act allows for counties to establish Secure Residential Care Centers for Children and Youth (SRCCCY), and a Juvenile Corrections Study Committee is to be created by the State DOC to recommend rules for services and programming for SRCCCYs by **December 31, 2018**. The Act creates a grant program to provide funding for construction of these facilities with the State grant committee established to review SRCCCY Grant applications due to the State by March 31, 2019. The SRCCCY shall be a facility that provides secure housing for Males, Females, and youth that identify as Other.

1.2 Specific Objectives

The design of the facility will provide a Secure Residential Care Center for Children and Youth including education, vocation, medical, mental health, wellness, recreation, and other programmatic support spaces incorporating safe and appropriate accessibility for all SRCCCY youth, staff, attorneys, visitors, clergy, and volunteers. It will allow for internal and external program convenience to encourage a positive transition for children and youth as they return to the community.

1.3 Value and Goal Statements

The overall values, goals, and vision of the project are captured in Section 2.

Safety is paramount and should be considered in terms of building perimeters and varying security level perimeters. It should be unseen, normative with ligature-resistant furnishings, with high visibility to reduce assault/abuse, and meet PREA (Prison Rape Elimination Act of 2003) promoting required privacy of children and youth in specific areas or programs to maintain their dignity. The project should be sustainable in terms of being both fiscally supported and environmentally responsible, with the ability to respond to program evolution and continue to create positive outcomes. There will be no future expansion, plan for youth population numbers to decrease over time. Design building with the ability to be repurposed in the future.

Additional Guiding principles behind the design effort are as follows: ensure that all children and youth come home; provide a safe, healing, and restorative learning environment; environment designed to encourage regular interaction between residents and staff; satisfy user critical operational needs and provide adequate core support services; attain staff efficiency and retain talent; provide “add-alternate” options where necessary to insure the preceding items and maximize the user of existing dollars; create a sustainable model regarding construction, operational, and maintenance costs.

1.4 Data Gathering, Analysis and Conclusions

Data has been gathered through the following resources: tours of the existing Vel Phillips facility, tour of Milwaukee Job Corps Center, New Beginnings Youth Development Center; Steering and Work Group meetings & Select Interviews; Milwaukee County Standards & Applicable local, state, and federal codes and standards; Correctional and Architectural Best Practices including PREA (Prison Rape Elimination Act), ACA Standards (American Correctional Association), & WELL Guidelines.

Data has been primarily compiled within the Owner’s Project Requirements. As the facility’s design development drawings and narrative are further developed the compiled data shall complement and inform all aspects of design.

1.5 Budget Summary

Wisconsin Act 185 provides funding for SRCCCY facilities through a grant program of \$40 million for all Wisconsin counties.

- Counties may apply for grants:
 - 95% of the costs of designing and constructing a SRCCCY
 - 95% of the costs of designing and constructing a facility that houses both a SRCCCY and a juvenile detention facility
 - 100% of costs of designing and constructing a SRCCCY or a portion of a SRCCCY for female juveniles
 - Eligible construction costs include costs of renovating an existing structure
 - Successful applicants will also be reimbursed for 95% of design costs incurred in preparing a grant application

Milwaukee County estimates that they are eligible for approximately \$24 million of the grant based on the % of youths that have in the current system, but the exact dollar amount received will be determined in the grant application process by the state. Milwaukee County would then be required to provide 5% of the project cost totaling \$1.2 million. **In total this would provide a total project budget of \$25.2 million.** Per the Feasibility study the two concepts for the SRCCCY facility at Vel R. Phillips detention center has the following estimated project budget.

Project Budget (See breakdown in section 9.1)

- **Concept 4.1 = \$ 41,572,201.15**
- **Concept 5.1 = \$ 45,397,735.52**

Based on this, the estimated project funding does not meet the project funding need and additional funding is required for the project to move forward with either indicated option at Vel R. Phillips center.

1.6

Schedule

Project schedule for SRCCY concept 4.1 or 5.1 at the Vel R. Phillips Detention Center.

Project Schedule

Preliminary Design and Feasibility
A/E team Selection

Current

August 10, 2018

Design Charrette Vel R. Phillips Site		Oct. 5, 2018
Present Multiple Concepts to Facilities Work Group		Oct. 19, 2018
Select Two Final Concepts to Develop		Nov. 2, 2018
Finalize Two Concepts for Cost Estimating		Nov. 16, 2018
Tour Vel R. Phillips Detention Center / MCAP Pods		Nov. 19, 2018
Draft Feasibility Study Report/Owner Review		Nov. 30, 2018
Cost Estimate on Concepts at Vel R. Phillips	2-week duration	Dec. 5, 2018
Complete Vel R. Phillips Feasibility Study Report	Week of.....	Dec. 17, 2018

**Estimated Schedule for future A/E design services
for traditional Design-Bid-Build process**

Start Date TBD

Site and Concept is approved Prior to A/E progress

- *Site is Under control*
- *Revised Zoning is approved*
- *# of beds has been decided*

Schematic Design Documents/Owner Review	<i>Assumes Start Jan. 1</i>	Feb. 22, 2019
Owner Review Period	1-week duration	March 1, 2019
Complete Schematic Design Documents	1-week duration	March 8, 2019
SD/Cost Estimate	2-week duration	March 22, 2019

Wisconsin Act 185 Grant Application Submittal <i>(Start of DD assumes progressing before decision on grant application is made)</i>		March 31, 2019
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Design Development Documents/Owner Review	3-month duration	June 28, 2019
Owner Review Period	1-week duration	July 5, 2019
Complete Design Development Documents	1-week duration	July 12, 2019
DD/Cost Estimate	2-week duration	July 26, 2019

65% Construction Documents	2-month duration	Sept. 20, 2019
Owner Review Period	2-week duration	Oct. 4, 2019
90% Construction Documents	1-month duration	Oct. 11, 2019
Owner Review Period	2-week duration	Oct. 25, 2019
Complete Construction Documents	2-week duration	Nov. 8, 2019
Cost Estimate on Construction Documents	3-week duration	Nov. 29, 2019

Complete Final Bid Document Approval	2-week duration	Dec. 13, 2019
Bid Documents Available for Bidding		Dec. 16, 2019

Construction Bidding and Contract Signing	2-month duration	Feb. 10, 2020
Project Construction Complete	10-month duration	Nov. 30, 2020
<i>10 Months is not an acceptable time frame for construction and is why Milwaukee County is looking at CMAR process.</i>		

Substantial Completion		Dec. 1, 2020
Closeout /Final Completion /Owner Occupancy	1-month duration	Jan. 1, 2021

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PROGRAM DEFINITION AND NEEDS ANALYSIS

2. PROBLEM STATEMENT

2.1 Project Background and Purpose

Wisconsin Act 185, enacted in April 2018, relates to juvenile correctional facilities, and requires closure of currently State-run facilities in Lincoln Hills/Copper Lake by January 1, 2021. The Act allows for counties to establish Secure Residential Care Centers for Children and Youth (SRCCCY), and a Juvenile Corrections Study Committee is to be created by the State DOC to recommend rules for services and programming for SRCCCYs by **December 31, 2018**. The Act creates a grant program to provide funding for construction of these facilities. A Grant Committee will be established by the State for the purposes of reviewing applications and awarding grants for the construction of county SRCCCYs.

Wisconsin Act 185 Links:

<https://doc.wi.gov/Documents/AboutDOC/Act185/Act185Memo.pdf> (Act Memo)

<https://docs.legis.wisconsin.gov/2017/related/acts/185> (Act)

Milwaukee County Department of Health and Human Services – Youth Justice Reform Link:

<https://county.milwaukee.gov/EN/DHHS/DYFS/Youth-Justice-Reform>

2.2 Values, Goals and Recommendations

The overall values and goals of the project are captured in the Vision statement below:

Establish a safe, positive, sustainable, and developmentally appropriate treatment environment for youth committed to the county under Wisconsin Statute Section 938.34(4m) that effectively promotes accountability, protects the community, reduces recidivism, and returns youth to our community with the skills needed to become successful and productive citizens.

Values and Goals are described in Section 1.3 of this report. See Owner's Project Requirements for detailed description of values and goals. The Recommendation is to design a SRCCCY facility connected to the existing Vel Phillips, allowing the addition of new normative living units and renovating the existing MCAP housing units. This allows the new facility to meet the Vision statement as well as incorporate the required program areas needed for this Secure Residential space. Using the existing Vel Phillips site also expedites the schedule since the County already owns this land. The SRCCCY will still have its own identity (separate from corrections) by creative use of building massing and a separate public entrance. The convenience of being on the Vel Phillips site means that youth are also in close proximity to the Children's Court on site.

2.3 Needs Analysis

A Needs Analysis is being created by the **Annie E. Casey Foundation** and a preliminary rough estimate is being provided by Milwaukee County with the current estimate being between 50-70 beds with the highest estimate at 80 beds. The goal is to provide a modular design, so the facility square footage can be increased or decreased once the final needs assessment is released.

For the purpose of this study in order to evaluate the concepts on this site, It was agreed the design basis for Vel Phillips expansion options is 50 new beds (5 living units of 10 beds each). This size living unit was determined by the specification by DYFS of a target 1:5 staffing ratio.

3. PROGRAM ANALYSIS

3.1 Project Stake Holder Interviews

- a. The Steering Committee
- b. The Work Group
- c. Mark Mertens, Div. of Youth and Family Services
- d. Mary Jo Myers, DDHS
- e. Sharlen Moore, Youth Justice Milwaukee
- f. Running Rebels
- g. Milwaukee County Judges
 - i. David Feiss
 - ii. Holly Szablewski
 - iii. Jane Carroll
 - iv. Marshall Murray
 - v. Mary Triggiano
 - vi. Michael Dwyer

Interview Data has been compiled within the Owner's Project Requirements. The outcome of these interviews informed the programming and narrative aspects of design.

3.2 Comparable Facility Visit – New Beginnings Youth Development Center

As part of the process in developing the OPR and the concept plans members of the work groups were able to visit a comparable facility called New Beginnings Youth Development Center in the Baltimore area that is run by the District of Columbia.

<https://dyrs.dc.gov/service/new-beginnings-youth-development-center>

The construction of New Beginnings and the program it offers for youth in Department of Youth Rehabilitation Services (DYRS) custody grew out of early Work Plan initiatives for the *Jerry M.* class action suit. *Jerry M.* required DYRS to build a new facility for the housing of detained youth and the development of a “Missouri-inspired” model-unit program that improved on long-standing safety and youth treatment issues that occurred at the previous facility DYRS operated, called Oak Hill.

In addition to DYRS leadership’s involvement in the development of this project, the following parties were also organizers and stakeholders:

- Court-Appointed Special Arbiter
- District Department of General Services
- District of Columbia Blue Ribbon Commission on Youth Safety and Juvenile Justice Reform
- Plaintiffs of the *Jerry M.* class action suit

The District of Columbia already leased the land that the New Beginnings campus was built on. The campus is directly adjacent to the Oak Hill facility where youth were previously housed.

The Work Plan process related to the New Beginnings construction started in 2005, and the facility opened in mid-2009. Facility Construction began in early 2008 and was completed in May 2009. Youth placement at the facility began in June 2009.

New Beginnings is a 90,000 square foot, state of the art campus on 15 acres of land. The campus includes multiple buildings on the site. It has three building for housing, each with two pods accounting for 10 beds per pod. The current staff to youth ratio is 1 to 5. There is a separate Gym/recreation & Maintenance building, and then one other building that houses all other functions. Those function include, Education, an auditorium, Cafeteria, dining hall, Health Center, Visitation, Administration, Admissions, and Security. The campus also has an outdoor recreation area that includes a football and baseball field. The facility has laundry rooms on each Unit. The Culinary Department provides food services daily

The Staffing Model that is utilized at DYRS is the Full-time Equivalent (FTE) Model. New Beginnings Youth Development Center has a Superintendent, Deputy Superintendent of Operation, Deputy Superintendent of Treatment, Behavioral Health Manager, 12 Shift Commanders, 6 Treatment Managers, 6 Mental Health Specialist, 110 Youth Development Representatives, 2 Recreation Specialist, Culinary Manager, 7 Cooks

New Beginnings Youth Development Center employs the DC Model Behavior Modification curriculum as a module by which youth progress through Stages and Tiers. This Model encourages young adults to be humble, truthful, understanding while upholding themselves, their families and communities through personal accountability and integrity.

The DC Model includes two programs PATHS and LOTUS. that involve graduate systems where youth progress through a series of staff facilitated and self-exploration interventions. These programs are designed on the premise that in order for youth to truly change and experience rehabilitation. The youths must go through a process of self-exploration and self-growth that addresses their history, family issues, and challenges, as well as how these factors have influenced their present situation.

4. PHYSICAL ENVIRONMENT ANALYSIS

4.1 Existing Vel R. Phillips Building & Site - Capacities and Deficiencies

The Vel R. Phillips Youth and Family Justice Center offers a variety of services and programs intended to divert youth from court and to provide them with opportunities to become more productive citizens. The building houses 120 beds for youth awaiting trial, supported by over 500 non-profit, State, and County employees.

The existing Vel R. Phillips facility is not large enough to accommodate the new population sentenced to the SRCCCY. The current SRCCCY design will have 50 new beds and with 22 MCAP beds being renovated at Vel Phillips for a total of 72 Beds. At Vel Phillips, any parking that is lost due to added SRCCCY program on site needs to be replaced on site. The SRCCCY program requires approximately 100 additional parking spaces. The following spaces in Vel Phillips could be shared with the new SRCCCY:

1. The gymnasium could be shared between detention center and SRCCCY
2. The food prep area could be shared but would need to have a major renovation to accommodate food preparation activities as currently food is prepared off site.
3. Two housing pods that are currently used by MCAP could stay in use by MCAP but would need to be renovated to meet SRCCCY design guidelines.

Upon further refinement of the concepts and the review of the Vel R. Phillips facility the function does not work as well reusing the existing gymnasium and food prep area. So those have been incorporated into the 2 final designs.

- Design 4.1 eliminated 160 existing parking spaces and therefore would require the creation of at least 260 spaces to accommodate the new occupant numbers. The floor plan design has a central facility design housing daily program functions like dining, administration, visitation, and medical amongst others. The housing units are laid out in a campus feel each separate on the site with a separate security fence/barrier to safely secure youth within the greenspace. This layout preserves the location and function of the existing loading dock and weekend visitor access entrance/parking. The new floor plans tie the education program space into the existing MCAP housing pods. The MCAP existing interior courtyard would require a renovation from 100% concrete to the inclusion of greenspace.
- Design 5.1 eliminated 122 existing parking spaces and therefore would require the creation of at least 222 spaces to accommodate the new occupant numbers. The floor plan design wraps around a large central greenspace creating a secure barrier by using the facility itself in lieu of a security fence. This layout requires the demolition of the existing loading dock and weekend visitor access entrance/parking – thus requiring a new loading dock location near the east side south of the chillers. The new floor plans tie into the existing MCAP housing pods. The MCAP existing interior courtyard would require a renovation from 100% concrete to the inclusion of greenspace.
- Both options require the access road to be rerouted in the southwest corner around the new floor plan designs.

In concept 5.1 the area on the west side of the facility becomes a secure greenspace which will then no longer be able to be used for its current functions as loading dock, receiving, emergency generator, and weekend visitor entrance. Preliminarily it is

figured that the loading dock/receiving area can be relocated to the east end of the detention center. (see appendix A) The emergency generator will have to be relocated and a new one provided for the new building area somewhere on site. Finally, the weekend visitor will also have to be relocated somewhere else on site or provisions made at the existing Vel R. Phillip entrance of new SRCCCY.

With both options there is considerable amount of existing parking lost on site that needs to be replaced plus additional parking needed for the SRCCCY. With no open space to develop as new surface parking, a parking structure must be developed at some location on site. The parking structure will need to accommodate between 222 spaces and 260 spaces plus the ones lost (estimated 80 spaces) on the surface lot where the structure is located. **So, a parking structure for a total of 302 to 340 spaces will need to be provided.**

4.2 Opportunities and Special Planning Issues to be Resolved

Within a new or renovated facility, there are new opportunities and special planning issues to be resolved. Some of the opportunities and special planning issues are:

- Access to Natural Light – Milwaukee County has placed a very high priority on creating a facility that has high amounts of natural light throughout the facility including residential areas, educational areas, corridors and general operational spaces throughout the facility. While allowing daylight the ability to control views is required.
- Emergency Access – Easy access to the facility by staff in and first-responders is critical. Also critical is increasing internal safe zones that allow the staff to respond to emergencies by moving children and youth to areas without releasing them from the building.
- Contrasting Security-Level Housing with Normative Common Team Environments – Milwaukee County desires that the security of housing areas have distinctly different characters, yet ensure the security is “unseen” in order to provide a more normative environment. The architecture, space, and equipment amenities can create incentives for good behavior, and disincentives for bad behavior. Consistent with this notion is the idea of creating the living space or dayrooms for these areas to be more spacious with more privileges allowed in this visible area. Providing an attractive and safe environment and space for youth to produce a restorative and learning environment.
- Core Support – Milwaukee County wants to ensure that the initial facility design – whether on Vel Phillips or on other sites TBD – has adequate capacities for core support services (mechanical, electrical, data, technology systems/locations in addition to Core Program spaces such as Admissions/Intake, Food Prep/Storage, Medical Exam/Infirmary Rooms) to accommodate future populations. Emphasis on safeguarding core support program services, are sufficiently provided for with the detailed spatial program located in the Owner’s Project Requirements.
- Staff Recruitment, Retention, and Satisfaction – Milwaukee County would like to ensure that the environment and spaces for staff were sufficiently attractive and safe so that various staff positions are more desirable. Such accommodations would help attract and retain staff, which improves staff performance, reduces training needs and expenses, and provides continuity for the children and youth in their care. Provide adequate daylighting to all spaces to the extent possible.

- Civil Sustainability and Environmental Issues – Creating a site that does not simply meet storm water code requirements, but creates a unique space that integrates green, natural elements to reduce the construction of impervious surfaces.
- Existing underground utilities -- Both options 4.1 and 5.1 will require relocation of underground utilities but have been designed to not require relocation of larger underground utility items as noted in Appendix E & F.
- Existing underground utilities – On the west side of the existing Vel R. Phillips facility there are existing underground, sanitary, storm, electric, and water lines that are in conflict with the layout of the SRCCCY. In addition, there is a water tower and easements that needed to be accounted for in the concept's layout. The two main utilities that need to remain in place and undisturbed is the 60" water line that serves the business park to the south, and the Wenergies electrical main feed to the Vel R. Phillips facility.

The security of housing units and security levels within the facility will vary in three forms in spaces where youth are securely held in custody. While the physical forms of these spaces will be similar the main variation will be more in program/ curricula/ privileges will be adjusted. Security Levels 1, 2, and 3 are all detention strength in design. The finishes, plan layout, and a youth's freedom of movement will differ depending on the security level. Program, Curriculum, and Privileges will vary based on the classification of a youth to the appropriate security level:

- Security Level 3: Characterized by more correctional-type fixtures and furnishings, more limited youth mobility, and higher staff/youth ratios this level of housing may be most appropriate for purposes of initial assessment/evaluation and planning for youth, short-term holding of youth for sanctions or revocation, and/or for special populations for which additional security is needed for short periods of time;
- Security Level 2: Characterized by more normative/residential design, fixtures, and furnishings (but must meet DOC detention strength requirements) this level of housing will be most appropriate for housing youth after an initial assessment periods as they become more fully engaged in programming and activities. Youth mobility within the unit may be greater than in Level 3, and youth may have more access to a variety of privileges, personal belongings, and activities.
- Security Level 1: Characterized by primarily residential features and furnishings (but must meet DOC detention strength requirements) and minimum staff/youth ratios, this level of housing will be most appropriate for youth that are fully engaged in and have made significant progress in their case plan/program, have demonstrated a range of pro-social skills that contribute to a positive environment, and are heading toward reentry to the community. Youth at this level will have access to more privileges/incentives, personal belongings, and activities. At the same time, youth may be expected to play a greater role in the overall operations of the housing unit and learn more independent/daily living skills that they will need upon reentry.

For MCAP Scope of Renovation, which consists of renovating two existing housing units within Vel R. Phillips, adding an addition to the existing courtyard, and creating a greenspace with basketball court within the existing courtyard. Refer to Report Section 8.2.2.1 for a detailed renovation list regarding this area.

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PROJECT SOLUTION

5. PROPOSED SPACE DESCRIPTION

5.1 Space Type Narrative

Through the programming process and the development of the Owner Project Requirements a Space Program was developed to be all inclusive of all the space needs for the new SRCCCY. In the development of the two concepts for the Vel R. Phillips site the program was further refined to fit the constraints of the site and existing building. This led to the exclusion of some spaces and the size reduction of some space in the program. Below is a summary of those spaces used in the concepts identifying main deviations from the OPR program.

Concept 4.1:

- Welcome Center.....748sf
- Administration.....5,170sf
- Security & Control.....1,782sf
- Admissions and Release.....825sf
 - A youth property storage room is not included as youths would be processed at Vel R. Phillips
 - A vehicle sally port is not enclosed so is not included in the bldg. square footage.
- Health Center.....4,400sf
- Visitation.....2,948sf
 - Restrooms need to be included in layout yet.
- Food Service.....2,530sf
 - Youth restrooms need to be included in layout yet.
- Recreation.....3,740sf
 - Gymnasium is only 3,000sf not the 6,000sf as in program.
 - Barbershop & Store is in dinning area.
 - Storage is not included in layout.
 - Restrooms are shared with education area.
- Education.....9,900sf
 - Vocational Classroom is only 1,600sf not the 3,500sf as in program.
- Housing.....15,048sf
 - Storage and laundry areas are combined in one space.
 - Dog vet training and storage areas are not included in housing pods.
- Mechanical / building maintenance space needs to be included in the building layout.

Concept 5.1:

- Welcome Center.....748sf
- Administration.....5,181sf
- Security & Control.....1,727sf
- Admissions and Release.....594sf
 - A youth property storage room is not included as youths would be processed at Vel R. Phillips
 - A vehicle sally port is not enclosed so is not included in the bldg. square footage.
- Health Center.....3,905sf
- Visitation.....2,904sf
 - Restrooms need to be included in layout yet.
- Food Service.....2,970sf
 - Youth restrooms need to be included in layout yet.
- Recreation.....5,654sf
 - Gymnasium is only 3,600sf not the 6,000sf as in program.
 - Barbershop & Store is in dining area.
- Education.....12,430sf
- Housing.....20,724sf
 - Storage and laundry areas are combined in one space.
 - Dog vet training and storage areas are not included in housing pods.
- Mechanical / building maintenance space is included in the recreation building area.

See Appendix B for Full OPR Program and Space Bubble Diagrams

MCAP Renovations:

The existing two (11 bed) MCAP pods will be renovated to provide the same environment of the new housing beds to the greatest extent possible within the existing buildings constraints. The scope is further discussed below. In addition to the finish renovations the following spaces will be added to the housing pods through building addition and renovation of existing space.

- Calm room - 120 sf
- Day room addition - 400sf
- Kitchenette - 50sf
- Office/ Assessment/ Meeting room
- Two Individual Shower Rooms
- Exterior Courtyard
 - Garden
 - Basketball Court
 - Outdoor Exercise Equip.

6. DESIGN CRITERIA AND METRICS TO ENSURE PROJECT SUCCESS

6.1 Applicable Codes, Regulations, and Design Guidelines

- A. All work will be done in accordance with all applicable local, state, and federal codes.
<https://city.milwaukee.gov/cityclerk/ordinances/tableofcontents#.W4kyj85KhhE>
- B. Systems and equipment will be designed and installed in accordance with the following codes and standards:
 - a. 2018 Wisconsin Commercial Building Code.
 - b. 2015 International Building Code.
 - c. 2015 International Mechanical Code.
 - d. 2015 International Plumbing Code.
 - e. 2015 National Electrical Code.
 - f. 2015 International Fire Code.
 - g. 2015 International Fuel Gas Code.
 - h. 2015 International Energy Conservation Code.
 - i. Current NFPA Life Safety Code.
 - j. Current American National Standard for Buildings and Facilities providing Accessibility and Usability for Physically Handicapped People.
 - k. Current American Society for Testing and Materials.
 - l. Illumination Engineering Society of North America - Lighting Design Handbook 10th Edition.
 - m. ASCE 7-10, Minimum Design Loads for Buildings and Other Structures.
 - n. National Electric Code.
 - o. National Fire Protection Association.
 - p. American National Standards Institute.
 - q. National Electrical Manufacturers Association.
 - r. Institute of Electrical and Electronic Engineers.
 - s. Underwriters Laboratory.
 - t. Americans with Disabilities Act.
 - u. Federal Communications Commission.
 - v. Electronics Industries Association.
 - w. Telecommunications Industry Association.
 - x. Building Industry Consulting Services International.
 - y. National Systems Contractors Association.
 - z. Infocomm International.
 - aa. City of Wauwatosa "Parking Lot Submittal" (this is what it's actually called, but it's for all civil site reviews).
 - bb. Milwaukee County DAS Engineering Review (as project owner, DAS Engineer would review).
 - cc. WDNR Water Resources Application for Project Permits (WRAPP).
 - dd. DSPS Civil Utilities Review.
 - ee. Milwaukee Zoning Code and requirements.
- C. All materials, equipment, and installation of materials and equipment will conform to the following standards as applicable:
 - a. Milwaukee County Standards.
 - b. ANSI/AAMI Standard ST79.
 - c. Underwriters Laboratories.
 - d. National Fire Protection Association.
 - e. National Electrical Contractors Association NECA Installation Standards.

- f. National Electrical Manufacturers Association NEMA.
- g. ASHRAE.

6.2 Sustainability – Well Guidelines

The facility may seek WELL accreditation. Regardless of accreditation, sustainable principles and approaches identified in WELL will be incorporated where applicable. Refer to the Owner's Project Requirements for additional information regarding WELL. The design team shall provide a list of WELL requirements which could be pursued in the design with cost implications. The most current version of WELL, version 1.0 is included in the Appendix B of the Owner's Project Requirements.

7. FEASIBILITY PLANNING CONCEPTS

7.1 Spatial Organization

Summary of Programming and Planning Decisions

During the design charrette held on October 5th, 2018 there were multiple approaches identified for additions and/or renovations for the SRCCCY at the Vel R. Phillips detention center. These approaches were then refined and presented to the facilities work group on October 19, 2018 where they were briefly discussed. The facility work group were given green and red dot stickers to indicate which approach met their goals (green dot) and which ones did not meet their goals (red dot). At the end of this meeting there were two approaches that were identified as meeting the goals for most of the work group. Concept #4 and concept #5 were the two concepts selected and they were then taken by the design team to be further developed.

These two concepts took the program developed in the Owner Projects Requirements (OPR) and organized it on the site in different manners to give the owner different options for the SRCCCY. To further refine and develop a specific program for the Vel R. Phillips site additional discussion was had in a program meeting on October 26th. In this meeting there were items discussed on what OPR program spaces are duplicated to what is already provided at Vel R. Phillips and what spaces can be shared with other spaces in an effort to reduce the square footage of the new bldg.

Concept 4.1:

Concept 4.1 is organized based on providing a campus environment for the SRCCCY. This is accomplished by separating the program spaces into five separate buildings around a secure outdoor greenspace that requires the youths and staff to move between bldg. outside. The goal for this is to create a more normative environment through this movement.

The entrance to the SRCCCY is separate from Vel R. Phillips detention center to create its own separate identity. All the program space is in single story building except for the administration program. All buildings are also separated from the Vel R. Phillips except for the Education & Recreation program which is connected at the main corridor by the MCAP pods. The site design was also able to continue the service road around the buildings and was able to maintain the existing loading dock area on the west side of the building. See appendix C

Concept 5.1:

Concept 5.1 is organized based on providing a single connected building, surrounding a secure greenspace where all movement is inside and the new SRCCCY is directly connected to Vel R. Phillips detention center.

The entrance to the SRCCCY is on the far west side of the site separate from the Vel R. Phillips detention center creating its own separate identity. The building is two story with only the housing on the second floor. The site design was also able to continue the service road around the buildings but was not able to maintain the existing loading dock location. A new loading dock area and week end visitor entrance will need to be relocated on the east side of the building. See appendix D

7.2 Evaluation of Concepts Pros and Cons

As concept 4.1 and concept 5.1 were discussed in the facilities work groups the following pros and cons were discussed of the different concepts.

7.2.1 MULTIPLE BUILDING/CAMPUS LAYOUT PLAN

Option 4.1	Pros	Cons
Civil	Separate area for Dog Lawn. Existing loading dock, parking, and weekend visitation entrance do not have to be relocated.	Smaller Greenspace
Structural	N/A	N/A
Architectural	Similar to Job Corps campus layout; Mass is broken down in to a residential feel. Ability to reuse and renovate two existing MCAP housing pods. Education connection to existing Vel Phillips.	Campus layout does not shelter the view into the facility greenspace – privacy of youth in question in relation to taller office buildings and hotel that abut the property. Higher Cost to reuse and renovate two existing MCAP housing pods. Campus buildings have no direct connection to each other during inclement weather. Greater amount of exterior wall surface than other concepts Building entrances to housing are set in alcoves and don't have as open sight lines without the use of cameras.
Fire Protection	Water Shutdown due to equipment breakdown or emergency would be individualized per building in the Campus Layout.	It is assumed a single fire service will enter the main building and be distributed to the separate buildings. This will need to be verified with the AHJ, otherwise each building may need its own service entrance room and equipment due to the campus layout. With a single fire service, the distribution will require underground sprinkler piping to each separate building due to the campus layout.
Plumbing	Water Shutdown due to equipment breakdown or emergency would be individualized per building in the Campus Layout.	It is assumed a single water service will enter the main building and be distributed to the separate buildings in the campus layout. This will need to be verified with the AHJ, otherwise each building may need its own service entrance room and equipment. With a single water service, the distribution will require underground cold water piping to each separate building due to the campus layout. Each building will need its own water heater and recirculation pump due to the campus layout.
Mechanical	Mechanical System Shutdown due to equipment breakdown or emergency would be individualized per building in the Campus Layout. Lower installation cost Lower maintenance cost Less complex equipment is simpler to control	It would not be practical to maintain the Option 5.1 design concept of a central heating and cooling plant with separate buildings. That would require chilled water and heating water piped underground to each building and larger pumps. Instead in Option 4.1, each building would require its own standalone roof mounted natural gas heat and refrigerant cooling air handling units. Heating in each building would be all electric rather than hot water. Not as overall efficient as a central plant Higher utility cost Maintenance required in several locations Shorter life expectancy
Electrical	The existing loading dock area is maintained which allows for less rework of the existing facility electrical service and allows the emergency generator to remain in place.	There will be much more infrastructure required between facilities to route power and fire alarm wiring underground from a main service location. New layout will require more electrical rooms, panels, transformers, and equipment at each facility.
Telecommunications	N/A	Multiple building would require additional telecommunications infrastructure and backbone cabling which would increase the complexity of the facilities networks as well as increase cost.
Security	N/A	Multiple building would require additional security electronics infrastructure which would increase the complexity of the facilities networks as well as increase cost. Large Greenspace has limited buildings to act as the secure barrier will require a fence or wall for a secure barrier for the facility and will greatly increase security costs.
Detention	Detention equipment will be the same regardless of Concept 4.1 or 5.1.	Detention equipment will be the same regardless of Concept 4.1 or 5.1.

7.2.2 SINGLE BUILDING PLAN

Option 5.1	Pros	Cons
Civil	Separate area for Dog Lawn.	Existing loading dock, parking, and weekend visitation entrance have to be relocated.
	Larger Greenspace	
Structural	N/A	N/A
Architectural	Single building will be super-efficient; Mass façade can be designed to look more like a multi-resident building or townhomes for an urban residential feel.	Not similar to Job Corps campus layout; could have a more institutional feel.
	Ability to reuse and renovate two existing MCAP housing pods.	Higher Cost to reuse and renovate two existing MCAP housing pods.
	Entire building is connection to existing Vel Phillips.	Living Areas on the second floor versus first floor access from dayroom to greenspace; outdoor patio area adjacent to second floor living areas could be provided.
	Campus layout uses the building façade as the secure barrier and shelters the view into the facility greenspace – privacy of youth will be kept more confidential.	Existing loading dock, parking, and weekend visitation entrance have to be relocated.
	Single building is connected so occupants are not affected during inclement weather.	
Fire Protection	Underground piping not required.	N/A
	Single fire service entrance.	
Plumbing	Underground piping not required.	N/A
	With a single water service entrance.	
	Centralized water heater and recirculation pump.	
Mechanical	It is more practical to maintain Option 5.1 design concept of a central heating and cooling plant with a single buildings. Heating would be all hot water rather than electric.	Higher installation cost
	More efficient as a central plant	Higher maintenance cost
	Lower utility cost	More complex equipment is simpler to control
	Maintenance required in a single location versus several.	
Electrical	Longer life expectancy	
	Single facility allows for one service where all electrical distribution and fire alarm wiring may be installed above ceilings. Design will likely require fewer electrical spaces, panels, and other electrical equipment.	Existing loading dock area becomes part of the green space burying the emergency generator in the green space. Emergency generator will either need to be fenced which causes re-fueling issues, or relocated to a secure location on site. If the generator is relocated all existing circuitry and controls will need to be extended to the new location.
Telecommunications	Single building would requires less additional security telecommunications infrastructure and backbone cabling than the campus layout which would decrease the complexity of the facilities networks as well as decrease cost.	N/A
Security	Single building would requires less additional security electronics infrastructure than the campus layout which would decrease the complexity of the facilities networks as well as decrease cost.	N/A
	Greenspace is within building façade – façade acts as the secure barrier for the facility thus reducing security costs.	
Detention	Detention equipment will be the same regardless of Concept 4.1 or 5.1.	Detention equipment will be the same regardless of Concept 4.1 or 5.1.

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8. DETAILED PLANNING CONCEPT

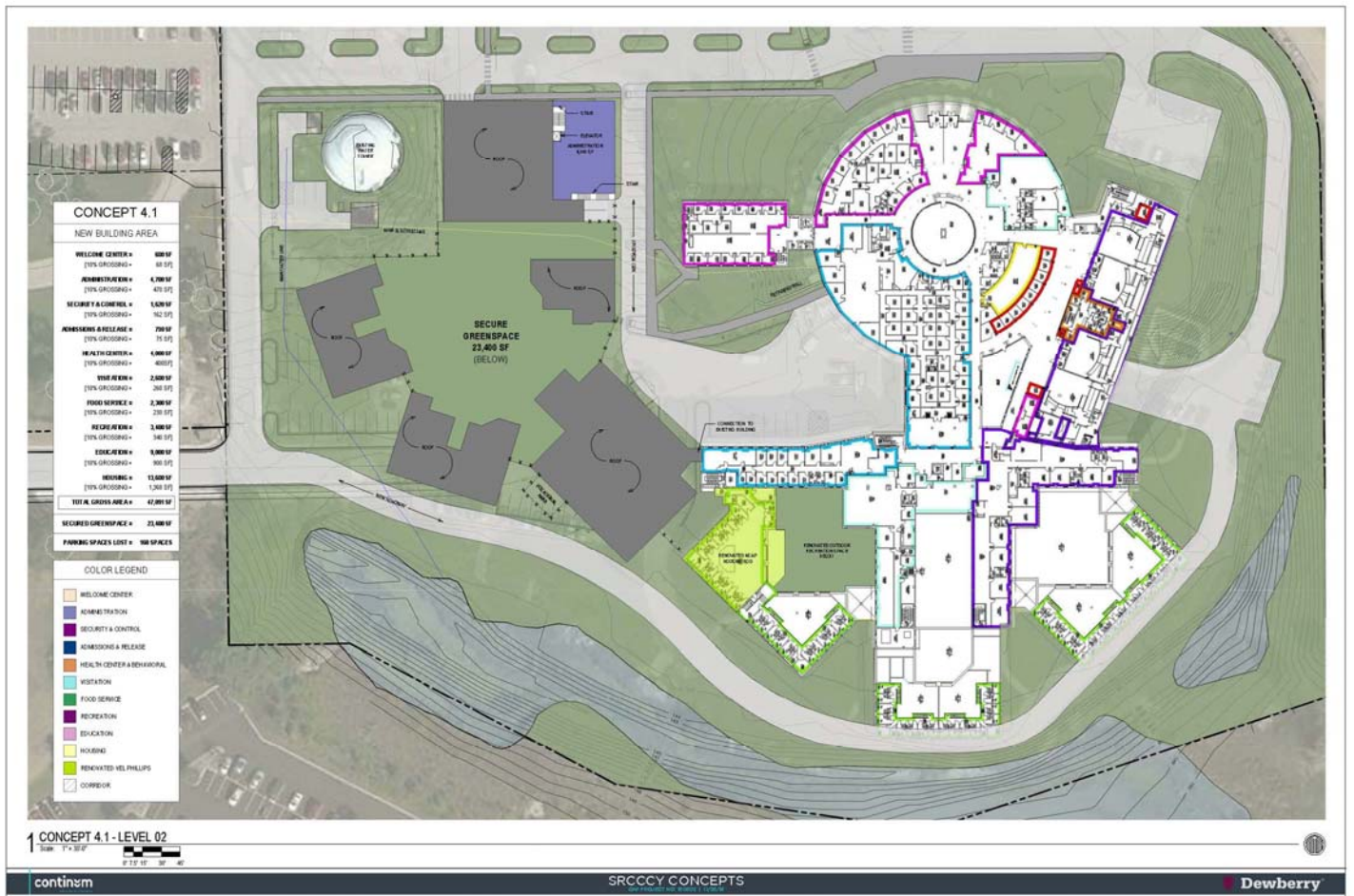
8.1 Spatial Organization

Summary of Programming and Planning Decisions

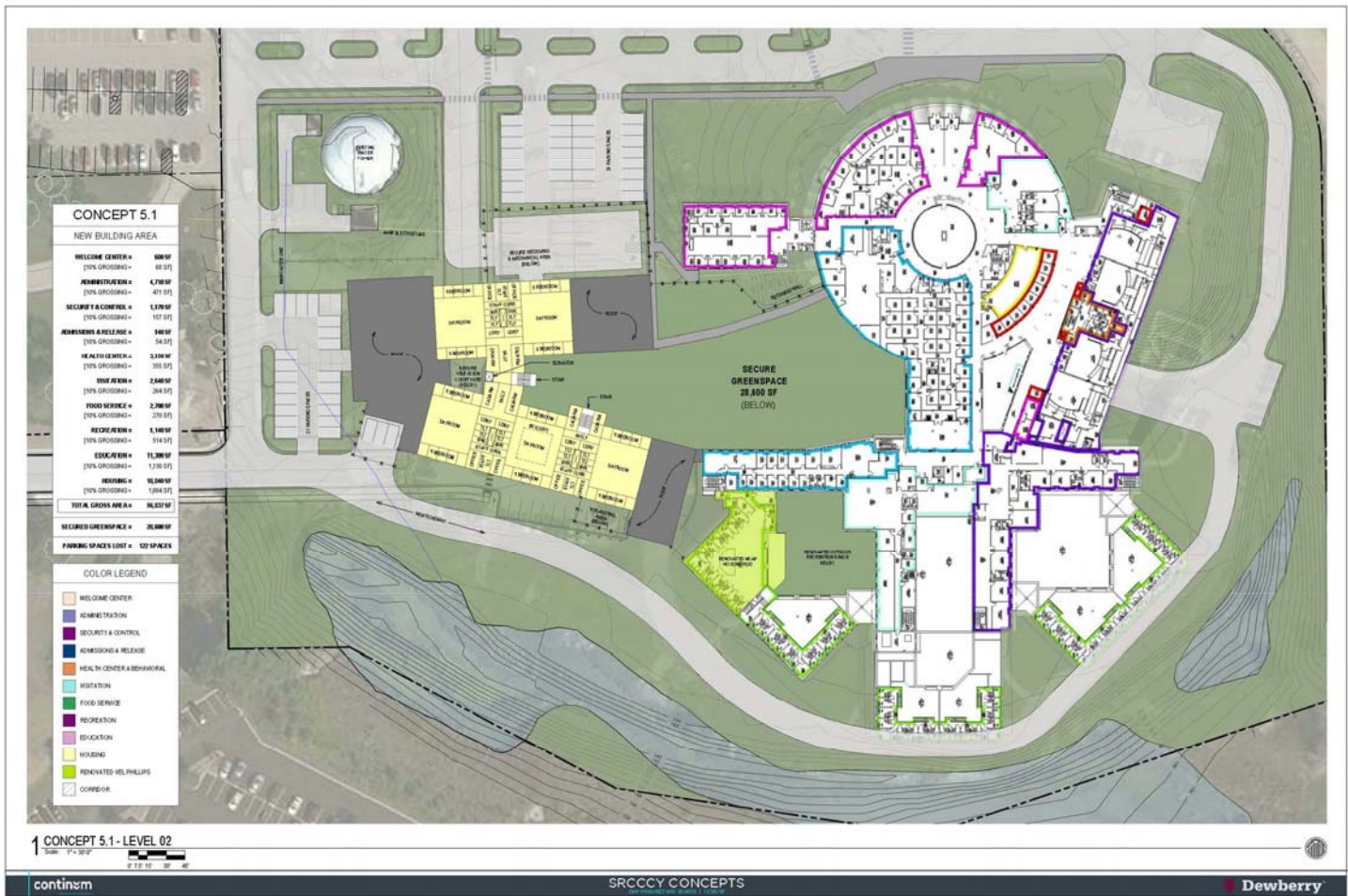
Following the OPR development, interview with stake holders, Facilities Work group involvement, Milwaukee County Facilities review, and tour of the Vel R. Phillips detention center, along with staff involvement at different levels, two organizational strategy and layouts were developed. A diagram of the concepts is included where one of them could be taken into schematic design.

See Appendix C & D.









8.2. System Narratives

8.2.1 Civil Systems

8.2.1.1 Concept 4.1:

Stormwater Management

In this concept, four new structures would be constructed in the southwestern portion of the existing parking lot. This would entail disturbing approximately 2.5 acres of land and a loss of 159 parking stalls. The net impervious area would decrease significantly with the inclusion of the secured green space situated between the buildings. From a storm water perspective, this concept would trigger both the Milwaukee Metropolitan Sewerage District Chapter 13 permit and the Wisconsin Department of Natural Resources Permit. The net decrease in impervious area will benefit the storm water management. Storm water management options include, but are not limited to, pond expansion, depressed green space area to serve as a dry detention basin that would be wet only during and shortly after rain events, bio-swales, and underground detention.

Site Utilities

Site utilities would need to be adjusted and/or relocated to accommodate the building footprints. The storm sewer, site lighting, and water lines will need to be relocated. (See Appendix E for existing utilities in area). There are two major utilities (60" water main & we Energies Electrical Feed) that will not have to be relocated as the concept was laid out to avoid these utilities.

Both options 4.1 and 5.1 will require relocation of underground utilities but have been designed to not require relocation of larger underground utility items as noted in Appendix E & F.

Traffic Circulation

Lastly, from a site traffic perspective, the circulation patterns are not significantly impacted. Since the concept impacts the entirety of the southwestern parking area, the traffic flow is not adversely impacted. Vehicles will still have the main north south entrance to the site, the loop around the south of the site and access to the northern parking area.

Grading

Lastly, the grading pattern on the southwest side of the site will remain relatively similar to the current grading pattern as most of the structures being added are replacing existing structures on the site. The internal grassed courtyard will need to positively drain towards a structure and release outside of the building footprint. The northwest structure will drain towards the south stormwater management facility.

8.2.1.2 Concept 5.1:

Stormwater Management

The new buildings/additions are more densely situated in this concept #5. Only the southern half the southwestern parking quadrant is impacted with a net parking decrease of 110 stalls. This concept requires almost the same land disturbance as the previous concept #4 at 2.5 acres. Based on the land disturbance totals, this concept will trigger both the Milwaukee Metropolitan Sewerage District Chapter 13 permit and the Wisconsin Department of Natural Resources Permit; however, the addition of the green space where the existing loading dock is situated will benefit storm water management significantly. For this concept, the storm water best management practices best suited to treat and detain storm water run-off include expansion of the existing pond, underground storage, and a bio-swales/bio-retention dry detention basins that will only be wet during and shortly after rain events.

Site Utilities

Site utilities would need to be adjusted and/or relocated to accommodate the building footprints. The storm sewer, site lighting, and water lines will need to be relocated. (See Appendix F for existing utilities in area). There are two major utilities (60" water main & we Energies Electrical Feed) that will not have to be relocated as the concept was laid out to avoid these utilities.

Traffic Circulation

From a traffic and circulation perspective, the major routes are maintained with the north-south drive and the looped drive around the south and east sides of the building. There are two clusters of parking stalls added in this concept to decrease the net loss of parking, but both clusters offer two-way traffic movements and multiple egress and ingress points which is easier on vehicular traffic users. The loading dock will need to be relocated to the east side of the building near the existing mechanical room. Relocation of the loading dock is feasible from a roadway perspective based on several turn templates that were analyzed using a Wheel Base 65' vehicle. The Wheel Base 65' vehicle represents the largest vehicle that would navigate the site and it is able to make a Y-turn from both the south and the north. (See Appendix G for turning radius studies)

Grading

The grading pattern near the proposed buildings will be similar to the existing drainage pattern. Stormwater will drain positively away from the building to the south into a stormwater facility in which stormwater will be treated. The loading dock will require a storm structure, preferably trench drain, at the low side and shall conveyed to drain away from the building towards the stormwater facility.

8.2.2 Architectural Systems

The architectural systems for this facility will be for a standard correctional facility. This includes systems that are durable, low maintenance, and maintain the required level of security.

Architectural Design

While this facility is a secure residential facility, the appearance, massing, and design elements are to portray the image of a smaller scale residential campus facility and not a correctional institutional appearance. The facility shall provide natural light at all possible interior rooms. The massing shall be smaller scale with articulated facades with variations in materials, texture and color.

Where accessible to residents ALL plumbing fixtures shall be detention grade (stainless steel or vitreous china as applicable) and shall meet ligature-resistant requirements. Trim for plumbing fixtures shall meet ligature-resistant requirements. For areas requiring ADA grab bars, ligature resistant ADA equipment shall be used. In staff-only areas typical ADA low-flow plumbing fixtures and trim may be used.

Where accessible to residents ALL door hardware shall be tamper-proof, detention grade and shall meet ADA and ligature-resistant requirements. In staff-only areas typical ADA door hardware may be used.

Furnishings in staff-only areas shall be part of FFE, suggest for best outcome that FFE be owner furnished and owner installed for best price and warranty. Furnishing shall meet the needs of the users and be ADA where required.

Furnishing accessible to residents shall be normative (detention grade) in residential areas meeting ADA and ligature-resistant requirements. Other areas such as medical and education shall be determined per use requirements but shall also meet ADA and ligature resistant requirements as applicable.

The design of the building can address suicide and abuse prevention by meeting PREA design requirements such as eliminating blind spots, providing privacy where necessary to maintain a person's dignity, and creating space where sight lines to all areas are transparent and critical. ACA guidelines and best practices call for accessible daylighting which is also transformative in providing a positive normative environment that promotes mental health.

8.2.2.1 Renovation of MCAP Pods Scope of Work (See appendix H)

Demolition Project Area

The area of project demolition does include areas of demolition related to secure housing pod spaces. Two housing pods that MCAP currently utilizes would be reconfigured to meet SRCCCY project requirements regarding program spaces, daylighting, and normative finishes and furnishings.

Demolition Scope of Work

It is anticipated that all within the existing housing pods currently utilized by MCAP that within that area of demolition, the following may be removed in its entirety and replaced:

- Hollow Metal Doors
- Detention Plumbing Equipment (replace if necessary – See Plumbing Section)
- Shared Showers
- Detention Glazing where necessary to achieve appropriate daylighting levels
- Detention Furniture and Equipment (tables, chairs, direct supervision desk)

Renovation Scope of Work

- General
 - Re-paint both housing pods
 - Renovate Shower Areas to be a laundry area for youths to do their own laundry.
 - Concrete topping slab to be added to create appropriate slope.
 - New chase to run vertically to rooftop for exhaust.
 - Renovate the Isolation room to be a single stall shower room
 - Concrete topping slab to be added to create appropriate slope.
 - New chase to run vertically to rooftop for exhaust.
 - Spaces that could be added with small 2 story addition (600sf/flr) in courtyard area for both Housing Pods.
 - Calming room: 120sf
 - Kitchenette: 8 lineal feet of casework. Microwave, small fridge, sink. (provide a way to secure with doors when not used – controlled access)
 - Dedicated classroom area, w/ teaching wall.
 - At first floor, a door access to courtyard from housing pod.
 - Windows and daylight access to courtyard maintained.
- Day Room
 - Replace flooring material in day room.
 - Remove spray acoustical material on ceiling of day room and replace with fabric wrapped acoustical panels.
 - Incorporate writing surfaces that youths can write on. Could but painted murals or chalkboard.
 - Demo large 8'x3' Security Desk and replace with smaller desk; Replace with a low-profile smaller desk (2'x4').
 - Requires new controls upgraded and tied to new building (new door controls)
 - Addition of a sally port created into the Dayroom from the corridor and from the Dayroom into the Exterior Courtyard.
- Bed Rooms
 - Replace doors to bedrooms to be different wood grained material (Soft warm material)

- Incorporate more chalk board paint or other surfaces that youths can write on. (Laminate GWP on wall and cover with chalk board paint.
 - Provide acoustical surface on ceiling (assuming ceiling is high enough not to be damaged).
 - Replace mattress with mattresses like seen at New Beginnings.
- Veterinarian Exam Room outside of MCAP Housing Pods

Covert first floor existing Receiving Room into a Veterinarian Exam Room for the Dog Program. Continue the existing corridor to connect to the new adjacent SRCCCY.

Abandoned Equipment

If facility is designed using renovated areas of an existing building all abandoned materials, equipment, piping, conduit, wiring, etc. that are located within or that pass through a remodeled space shall be removed. This includes equipment and components that are remotely located (e.g. in a mechanical equipment room).

Hazardous Materials Abatement

The need for hazardous material abatement is to be evaluated as needed and is part of the owners' work for the project. The A/E team shall coordinate those areas needing abatement with the owner and the construction documents.

Penetrations

When existing or new floors, walls, etc. are penetrated, care will be taken not to compromise the integrity of the building structure. All penetrations of fire rated floors, walls, etc. shall be appropriately "fire-stopped" with the appropriate sealant required for a detention setting.

8.2.2.2 New Facility Scope of Work

Exterior Wall Assembly

Exterior walls composition is to include the following elements.

- Exterior Cladding: This material will include either masonry, fiber cement board, metal panels, EIFS, other similar siding materials and support members. The appropriate material will be selected based on the design aesthetic and level of security required.
- Behind the exterior cladding will be a minimum 2" of rigid insulation with a spray applied air and vapor retarder on the substrate to provide thermal insulation and a water-resistant barrier to the building.
- The final element of the wall assembly will be a minimum of 8" thick load bearing CMU wall that is grouted for the appropriate level of security.

Window openings will be thermal broken aluminum storefront system with double pane insulated glass. Where appropriate security level is needed a detention grade exterior window with detention grade thermally broken hollow metal exterior frame

with glass-clad polycarbonate will be provided. Windows, clerestory, and or skylights will be located as to provide the maximum amount of daylight to the building occupants while maintaining security at the facility.

Roof assembly base system will include, steel structural support system, metal roof deck (acoustical deck where exposed), rigid insulation (min R-24), and fully adhered roof membrane. Alternatives to this system could include the following.

- Pre-cast concrete plank with topping plank where needed for second floor structure at the two-story buildings' locations.
- A wood deck or wood beams structure for locations where the structure is exposed to provide a soft wood tone feel to the space. The key space to explore this in would be the housing units.
- Where a pitched roof is desired architecturally the use of a standing seam metal roof will be explored to create a less institutional aesthetic.

Floor assembly will be a cast in place concrete slab on grade with appropriate sub base layers and 10 mil vapor retarder, or a pre-cast concrete plank with topping slab at a second floor. Exact specifications for the concrete slab will be determined by Structural. Rigid insulation (min R-10) will be provided around the perimeter of all concrete foundation walls to a depth of 4'-0" below grade and horizontally under the floor slab for a distance of 2'-0" typical.

8.2.2.3 Interior Design / Finishes / Materials

Flooring materials are a key part of a building appearance and durability. For this facility we would recommend using a mixture of, vinyl composition tile, ceramic tile, rubber flooring, sheet vinyl, carpet, and a clear epoxy floor finish. To create a lively and non-institutional feeling we would recommend a neutral palette for the floor finishes as they are not replaced as frequent and will then not be dated in the future. Carpet and vinyl composition tile will be used the most except for where a specialty floor finish is needed. Sustainable alternates to vinyl composition tile should also be explored where appropriate and it meets the budget.

Ceilings for the different spaces are to be either exposed structure, acoustical ceiling tile, or detention grade ceiling materials. The materials required for the exact locations are to be determined in schematic design.

Interior walls need to match the durability and security level of the program area. The majority of all the interior walls will be concrete masonry units, with structural determining if walls are to be load bearing or non-loadbearing partitions. Where a non-institutional feeling is needed those walls can be laminated with GWB to provide a different level of finish. This should be carried out in the bedrooms of the housing units where one wall can be covered with chalkboard paint to allow youths the ability to write on the walls. This same approach should be explored in other areas of the building. Doors in the facility should use a solid core wood door with fully welded hollow metal frames where possible. Where the security level does not allow for this type of door a swinging metal correctional grade door must be used.

Interior walls that are in the administration or welcome center area could be made of a min. 3 5/8" deep metal stud and 5/8" gypsum wall board if the level of security needed allows for it. This would help to create a non-institutional feel for these areas but would need to be explored on a case by case basis.

The main finish for all these walls surfaces is a three-coat paint system with the appropriate paint per the substrate. To further enhance the aesthetic of the facility and create a warm non-institutional feeling an overall approach needs to be developed to highlight certain areas in the facility with a higher level of finish. These areas that are highly visible can have inspirational messages to the youths, staff and visitors of the facility.

What will make this facility exceed expectations is its ability to create an environment that surpasses the typical correctional facility appearance and stereotypes. A key part of that is through the interior design and the willingness to use color, images, and materials in a different manner. Here is a preliminary list of those elements that should be explored during schematic design.

- Create a brand or image for the facility.
- Critical to this is a name for the facility, logo, and message.
- If a color scheme is developed for the logo, that color scheme should be used throughout the facility.
- Create a lobby/reception desk with a warm inviting feeling that has an architectural feature wall with name of the facility.
- In the corridor and other areas of the facility continue the color scheme but develop special areas to include art work, murals, inspirational messages for all users.

8.2.2.4 Detention Systems

Per the County of Milwaukee goals, the SRCCCY secure spaces shall be constructed of normative, sustainable, easy-to-maintain, long-lasting and timeless materials following the standards set by the OPR.

The OPR for the Physical Security at the proposed SRCCCY are based on the current state of detention equipment used in correctional systems. The integration of the components to the security electronic control system will provide a safe environment for both staff and youth. The intent should be to include some aspects of detention such as detention doors, detention locks, security glazing, security ceilings among other more normalized detention equipment that contribute to the obtaining the correct security perimeters that the facility requires while providing a more normative environment. Realizing that the use of the proposed facility is intended for youth detainees, the design intent needs to minimize the feeling of a hardened institution.

1. Current State of the Technology – Addressing the major subsystems that make up a state of the art correctional control system.
 - a. Detention Doors and Frames - Will comply with ASTM, UL and NFPA codes for proper fire rating based on location of door in the building. Will be 12 gauge or 14 gauge based on the location and the level of security in that area.

- i. In areas where less security is required, curtainwall or storefront systems can be used.
- b. Detention Window - Will comply with proper ASTM rating based on location and level of security in that area.
 - i. In areas where less security is required, storefront systems can be used.
- c. Detention Glazing - Will comply with proper ASTM rating for forced entry based on level of security in that area. Glazing will also comply with proper UL ratings for ballistic requirements based on the level of security in that area.
- d. Detention Hardware – Options:
 - i. One: Electronic Sliding door devices depending on need. Will comply with performance requirements of ASTM based on the type of locking device and the area's level of security.
 - ii. Two: Swing (Recommended) door devices. Will comply with performance requirements of ASTM based on the type of locking device and the area's level of security.
- e. Mechanical - Swing door devices. Will comply with performance requirements of ASTM based on the type of locking device and the area's level of security.
- f. Detention Bedrooms where required – Options:
 - i. One: Modular Precast or Precast Panel. Will meet code requirements for physical and seismic loads. Threaded inserts for support and attachment of all equipment, fixtures and furnishings.
 - ii. Two: Masonry - Provide masonry per proper ASTM guidelines.
 - iii. Three: Metal Panel / Prefabricated Steel -Comply with proper ASTM codes for impact testing. Comply with proper ASTM codes for Sound Transmission Class (STC). Comply with ASTM, UL and NFPA for fire ratings. Provide 2" thick, grout filled wall panels.
- g. Detention Metal Ceilings where required - Pan type ceiling system. Provide NRC of not less than .80 in accordance of ASTM.
 - i. Single and double skin interlocking plank ceiling system. Provide NRC of not less than .90 in accordance of ASTM, and 24" wide
 - ii. Ceiling support - Provide wall perimeter angles at 16" on center. Provide intermediate Tee supports at 24" on center. Provide suspension supports at 36" on center attached to both the intermediate Tee supports and structure above. Reinforce all ceiling penetrations on secure side to prevent flexing.
- h. Detention suspended metal pan ceiling system where required. 18 gauge, 24" x 24" x 1" deep pans to be provided. Provide main runners, cross tees, hanger wires, and compression struts.
- i. Detention Equipment where required will include Safety Clothes Hook, Mirrors, Detention Grab Bars, Speaking Port / Access Port, Shelf w/ Safety

Hooks Combination, Pistol Locker (if required, recessed where possible), and Security Key Cabinet.

- j. Detention Furnishings – If required: Dayroom Seating, Wall/Floor Mounted Bunks, Wall/Floor mounted desk/seat, Dayroom Table, Bench style table, Wall/Floor Mounted Stool, and Floor Mounted Bench.
2. The items described above should be considered for the Physical Security/Detention systems. How each system will be implemented or incorporated will be determined based on the policies and procedures of the institution and the level of security desired.
3. Injured or ill youth requiring hospitalization shall be transported to the contracted hospital via Intake.
4. 10-bed Living Pods shall be based on the direct supervision best practices vs. indirect supervision. All other areas of the facility shall have multiple staff in direct contact/interaction with youth at all times.
5. A secure perimeter shall ensure control over access to/egress from the facility; to clarify a secure perimeter does not mean the facility has to be fenced off as security can be handled by providing interior courtyards which allows the building façade to act as the secure barrier.

8.2.2.5 Normative Furnishing Recommendations

Norix Furniture (<https://www.norix.com/>) has many nice options for more normative detention and commercial furniture options. Furniture options and recommendations will be further developed during design construction documentation development. Below is an example of normative furniture.



LEED/WELL Certification

The building will not be LEED certified. This building may seek WELL certification.

Accessibility

Detention design shall at a minimum shall conform to requirements of the Americans with Disabilities Act.

Code Compliance

All detention aspects of the facility, including furnishings and equipment, will be evaluated for compliance with current codes and standards and shall be upgraded as required to achieve compliance.

Access

Detention furniture and equipment shall be located and configured to allow adequate access to all equipment/devices that require operation and/or periodic maintenance such as access panels, thermostats, electrical outlets and voice/data jacks.

Noise Isolation, Room Acoustics and Speech Privacy

Interior wall partitions and security ceilings where required shall be constructed using the following County-approved standards to reach the acoustic performance, as indicated below:

Meet local and international codes. Varies per programed space.

Acoustical systems that should be explored through Schematic Design to help address acoustical noise and privacy are as follows.

- Any exposed metal deck should be Acoustical Metal Deck
- Where exposed ceilings are not required an Acoustical ceiling tile should be provided.
- In rooms where, additional acoustical noise reduction is needed fabric wrapped acoustical wall panels should be installed and at an appropriate height.
- Carpet as a flooring material will help deaden the sound in a room
- Acoustical CMU block can be added in those spaces where fabric wrapped panels are not possible to include.

Here is a preliminary list of those spaces that would need acoustics to be explored: Classrooms, Vocational Training, Gymnasium, Visitation/Dinning, bedrooms, Day rooms, Entrance Lobby, and Corridors.

8.2.3 Structural System

8.2.3.1 Renovation of MCAP Pods Scope of Work

The existing facility is constructed of reinforced cast-in-place concrete. Structural modifications of the existing structure are not in the scope except for possibility of new openings through the roof, walls, or structural floor slabs for MEP penetrations. Small penetrations can be accomplished by core drilling (i.e., less than 1'-0" in diameter) most likely without need for reinforcement. Larger openings can be reinforced with fireproofed structural steel beams.

The proposed small two story addition can be constructed of load bearing reinforced Concrete Masonry Unit (CMU) interior and exterior walls that will support a precast concrete plank with a concrete topping slab for the second floor and precast concrete plank for the roof. For security purposes, each vertical CMU cell will be reinforced with a continuous steel reinforcing bar and filled full height with pea gravel concrete. Exterior walls will have "punched" window openings. The interior and exterior reinforced CMU walls that support the precast plank roof and floor structures will be supported by either reinforced cast-in-place concrete foundation walls or reinforced CMU foundation walls that will extend a minimum of four feet below the exterior finish grade. The foundation walls will be supported by continuous reinforced concrete strip footing that will bear directly on natural or over-excavated soil with an appropriate bearing capacity. The first floor will be constructed of a reinforced cast-in-place concrete slab-on-grade on compacted granular fill with insulation and vapor barrier.

8.2.3.2 New Facility Scope of Work

The proposed two story facility will be constructed of either load bearing reinforced concrete or load bearing reinforced CMU interior and exterior walls that will support a precast concrete plank with topping slab second floor structure. The interior and exterior walls will continue up to support the roof structure above the second floor which can be constructed of precast concrete plank, structural steel beams or steel joists with metal deck, or glue laminated timber beams with wood deck boards that will be exposed to view from the interior. Precast concrete beams will be used to support the second floor structure over large openings at the first floor level. Likewise, precast concrete beams or steel beams or glue laminated timber beams will be used to support the roof structure over large openings at the second floor level. Precast concrete columns or reinforced cast-in-place concrete columns may be required by design to support floor or roof beams over large span openings. The exterior walls, either concrete or CMU, will be cavity wall type and will be reinforced as required for security purposes. The exterior walls will be supported below grade by cast-in-place concrete foundation walls 6" to 8" wider than the structural walls they support above grade to accommodate an air space, rigid insulation, and an air-water barrier contained between the exterior cladding and the inner structural bearing wall that make up the exterior cavity walls. The foundation walls will be supported by continuous reinforced concrete strip footing that will bear directly on natural or over-excavated engineered soil with an appropriate bearing capacity. The first floor will be constructed of a reinforced cast-in-place concrete slab-on-grade on compacted granular fill with insulation and vapor barrier.

8.2.4 Fire Protection System

8.2.4.1 Renovation of MCAP Pods Scope of Work

Demolition Project Area

The area of project demolition does not include areas of demolition mechanical or electrical spaces.

Demolition Scope of Work

It is anticipated that all existing fire protection heads, branch piping and header piping, within the area of demolition, be removed in its.

Renovation Project Area

The area of project renovation does not include areas of demolition in mechanical or electrical spaces.

Renovation Scope of Work

Replace new header and branch piping along with new fire protection heads.

8.2.4.2 New Facility Scope of Work

Codes and technical references

The fire protection design will comply with the following codes:

1. 2018 Wisconsin Commercial Building Code
2. 2015 IBC
3. 2015 International Fire Code
4. City of Wauwatosa – Local amendments
5. NFPA

Tests by independent agencies whose classifications and requirements have general acceptance as regulatory:

1. UL
2. FM

Provide a wet sprinkler system conforming to NFPA and Fire Department standards. Modify the existing wet sprinkler system for renovated areas.

New fire protection piping will be routed below the existing structure.

Provide concealed sprinkler heads and exposed upright sprinkler heads as required in the building.

All components shall be FM or UL approved.

Pipe and Fittings

Carbon steel pipe, black, thickness per NFPA 13, conforming to ASTM A53, A135, A795. No light wall pipe less than Schedule 10 shall be used.

Provide pipe hangers or strut connected to structural elements to support piping. Space Hangers per NFPA 13 and FM Global requirements.

Testing

In accordance with the Standard for Inspection, Testing, and Maintenance of Water Based Sprinkler Systems as defined in FM Global requirements.

Hydro-statically pressure test the fire sprinkler system piping as required in FM Global requirements. Keep records of all testing for submission in Operation and Maintenance Manuals.

Sprinklers

Manufacturers: Central Sprinkler, Grinnell, Reliable, Star Sprinkler, Victaulic, or Viking.

Fusible link or glass bulb type, cast brass or bronze construction. Provide heads with nominal 1/2" discharge orifice except where greater than normal density requires large orifice.

Select fusible link or glass bulb temperature rating not to exceed maximum ambient temperature rating allowed under normal conditions at installed location. Provide ordinary temperature (165 degree) fusible link or glass bulb type except at skylights, sealed display windows, unventilated attics and roof spaces, over cooking equipment, adjacent to diffusers, unit heaters, uninsulated heating pipes or ducts, mechanical rooms, storage rooms, or where otherwise indicated.

Finished Areas

Semi-recessed, sprinkler heads in common spaces and occupied areas. Coordinate color of heads with architect, do not field paint.

Unfinished Areas

Plain bronze, upright or pendant sprinkler with solder link or glass bulb. Use higher temperature rated sprinkler heads in areas near heat sources, elevator equipment rooms, and elevator shafts.

Densities and hazard levels to be determined based on space usage.

Locate sprinklers maintaining clearances from obstructions, ceilings, and walls. Install sprinklers level in locations not subject to spray pattern interference.

Fire protection piping cannot interfere with building function.

Sprinklers shall be centered in ceiling panels and tiles.

Equipment Sizing Note

Where equipment sizes are indicated, they are PRELIMINARY only and will be confirmed or revised as the design progresses.

Concept 4.1: Fire service piping will enter the mechanical room and be distributed under ground to each separate building. A riser into each building will include a shut-off valve with a valve supervisory switch, a flow switch, etc. Each pod to be zoned separately.

Concept 5.1: Fire service piping will enter the mechanical room and be distributed throughout the building. Each pod to be zoned separately.

Manufacturers' Note

Where equipment manufacturers are listed, they are PRELIMINARY only to demonstrate the level of quality desired. Acceptable manufacturers will be confirmed as the design progresses.

8.2.5 Plumbing Systems

8.2.5.1 Renovation of MCAP Pods Scope of Work

Demolition Project Area

The area of project demolition does not include areas of demolition mechanical or electrical spaces.

Demolition Scope of Work

It is anticipated that all existing domestic hot water and cold water piping within the space, not serving other floors, will be removed.

Fixture demolition, along with relocation of some vertical piping, will require demolition within the existing fourth floor ceiling.

Renovation Project Area

The area of project renovation does not include areas of demolition in mechanical or electrical spaces.

Renovation Scope of Work

Replace piping as required to existing fixtures.

Replace existing toilets in remodeled area to anti-ligature stainless steel.

Replace existing bedroom sinks in remodeled area to anti-ligature stainless steel.

Add floor drains in remodeled areas just outside bedroom doors. This will require some floor cutting, patching and restoring to original conditions.

8.2.5.2 New Facility Scope of Work

Codes and technical references

The plumbing design will comply with the following codes:

1. 2018 Wisconsin Commercial Building Code
2. 2015 IBC
3. 2015 International Plumbing Code
4. City of Wauwatosa – Local amendments
5. Americans with Disabilities Act

Tests by independent agencies whose classifications and requirements have general acceptance as regulatory:

1. UL
2. ANSI
3. ASTM

Sanitary Drain and Vent

Provide a gravity drainage system for waste discharge from plumbing fixtures in renovated scope of work. The drain and vent piping serving the new fixtures in the existing building shall tie into the existing gravity sewer inside the existing facility.

Provide a sanitary vent system to protect the traps. The vents shall connect to a header pipe and connect to the existing vent system. Where no existing vent system is installed, provide new vent termination through the roof.

Changes in direction of drainage piping shall be made by the appropriate use of 45-degree wyes, long or short sweep 1/4 bends, 1/6, 1/8, 1/16 bends or combination.

Fittings shall be installed to make for the least possibility of stoppage. All horizontal drainage piping less than 3 inches shall be pitched a minimum of 1/4 inch per foot or run. Piping 3" to 10" shall be pitched a minimum of 1/8" per foot of run.

New sanitary piping will be required within the fourth floor ceiling to accommodate the fifth floor renovations.

Sanitary Waste and Vent, and Storm Pipe and Fittings

Cast iron, soil or no-hub, service weight, ASTM A74 or CISPI 301, with rubber gasket ASTM C564.

PVC, Schedule 40, ASTM D-1784 PVC-DWV socket fittings, ASTM D-2665 with PVC solvent cement, ASTM D-2564.

Drains and Cleanouts

By ACO, Josam, J.R. Smith, Sioux Chief, Wade, Watts, or Zurn.

Vent Termination

Existing to remain.

Pipe Joints

Install cast iron pipe and fittings, hub-less pattern, as recommended by CISPI in their publication "Installation Suggestions for Cast Iron No-Hub Pipe and Fittings".

Repair PVC pipe ends as recommended by manufacturer. Use a P-70 type primer (for PVC) and a PVC solvent cement appropriate to the pipe size and temperature range.

Cleanouts

Provide and install cleanouts as required by Code.

Testing

Hydrostatic test sanitary piping to 10 feet water column or with compressed air with no leaks per the Wisconsin Plumbing Code.

Water Filtration

An under-cabinet point-of-use water filtration system will be installed. This filtration system shall accommodate lead filtration.

Water Distribution

Connect to existing domestic water piping located in the ceiling space of renovated area. Distribute water to sinks and fixtures as required.

Provide cross connection prevention devices for all connections to equipment.

Hot Water Re-Circulation System

Install return system including check valves, balancing valves, and pumps. Pitch and grade all lines as required to ensure satisfactory circulation.

Balance return flow to provide continuous circulation throughout entire system. Test and demonstrate to A/E upon request.

Pipe and Fittings

Interior Above Ground:

Copper tube, Type L, hard temper, ASTM Specification B88, wrought copper sweat fittings and 95/5 solder joints tin-antimony, or other lead-free solder.

Wrought copper or cast bronze fittings, grooved ends, joined with mechanical couplings, rubber gasket seal, Victaulic style 606.

Install a white union or flange, as required, at each automatic control valve and at each piping specialty or piece of equipment which may require removal for maintenance, repair, or replacement. Where a valve is located at a piece of equipment, locate the flange or union connection on the equipment side of the valve. Concealed unions or flanges are not acceptable.

Shutoff Valves

Ball valve, bronze body, two-piece, full port, Nibco, Series 580. All metallic valves shall be used for all pipe materials.

Balancing Valves

Bell & Gossett "Circuit Setter" bronze body balancing valve with sweat or threaded ends, calibrated brass orifice, integral adjustment knob with calibrated scale, memory stop indicator, drain tapping and differential pressure metering connections.

Check Valves

Swing check, bronze body, resilient seat, Nibco, Series 413.

Valve Installation

All valves with screwed ends shall be installed using "Teflon" tape applied on male portion of piping fitting.

Each individual fixture or piece of equipment shall have an independent shut-off valve adjacent to fixture in addition to the required branch shut-off. Where valves are installed in walls an access panel shall be provided.

Valve shut-off full size of branch tank-off to supply stack or fixture group.

Provide valved drains at low points of systems as required or directed. **All piping shall be arranged to drain through valved drains.**

Testing

Test water piping before connecting fixtures with hydrostatic pressure of 100 psi without loss of pressure for at least two hours.

Upon completion of the water distribution system, test all valves to insure their full opening and flush out the system progressively by opening drain valves and building outlets and permitting the flow to continue from each until the water runs clear.

Disinfecting

Provide chlorine disinfecting. Test for presence of disinfecting agent at remote locations to ensure the disinfecting agent has reached throughout the domestic water systems. Other approved disinfecting methods may be used with prior approval of the Architect and local authorities.

Test for bacteria after disinfecting complete and domestic water system flushed.

Insulation

Elastomeric foam or fiberglass with kraft-paper jacket. Insulate horizontal storm and all domestic water pipes, above ground. Note that elastomeric foam insulation to be rated for installation in air plenum space. Elastomeric foam shall not be used on exposed piping except in mechanical rooms.

All piping shall be covered with 1-inch thick insulation except for cold water supply piping may be 1/2-inch. Note that 1/2-inch insulation may be used on all plastic water supply piping where used.

Plumbing Fixtures

Where accessible to residents ALL plumbing fixtures shall be detention grade (stainless steel or vitreous china as applicable) and shall meet ligature-resistant requirements. Trim for plumbing fixtures shall meet ligature-resistant requirements.

For areas requiring ADA grab bars, ligature resistant ADA equipment shall be used in shower and toilet areas.

Stainless Steel Water Closets, Lavatories and Showers (Exact Location of use TBD)

Acorn Engineering, or Willoughby.

Vitreous China Water Closets, Urinals, and Lavatories (Exact Location of use TBD)

American Standard, Kohler, Sloan, or Zurn.

Flush Valves

Sloan, or Zurn.

Faucet Fittings

American Standard, Chicago Faucet, Kohler, Moen, Speakman, Symmons, T&S Brass, or Zurn.

Stainless Steel Sinks

Advance, Elkay, Just, or Kohler.

Mop Sinks

Fiat, Mustee, or Zurn.

Drains, Traps, Stops, and Supplies

Brass Craft, Chicago Faucet, Dearborn, EBC, Keeney, Kohler, McGuire, or Zurn.

Equipment Sizing Note

Where equipment sizes, airflows, tonnages, etc. are indicated, they are CONCEPTUAL only and will be confirmed or revised as the design progresses.

Concept 4.1: Domestic cold water piping will enter the mechanical room and be distributed under ground to each separate building. The domestic hot water will require domestic water heaters, circulation pumps and expansion tanks at each separate building.

Concept 5.1: Domestic cold water piping will enter the mechanical room and be distributed throughout the building. The domestic hot water will require domestic water heaters, circulation pumps and expansion tanks in the mechanical room.

Drawings and Narrative

Design development drawings and narrative shall complement each other and should both be considered part of the report.

8.2.6 HVAC System

8.2.6.1 Renovation of MCAP Pods Scope of Work

Demolition Scope of Work

The project will not require demolition.

Renovation Scope of Work

The project will not require renovation work.

8.2.6.2 New Facility Scope of Work

Utility Service

The project will not require HVAC utility service work.

Ventilation

The project will be ventilated to current IMC 2015 requirements.

Outdoor Design Conditions

Winter: -1.4°F db.

Summer: 90°F db / 74.3°F wb.

Indoor Design Conditions

Occupied: Winter: 72°F.

Summer: 75°F db / 50% RH

Unoccupied

Winter: 65°F.

Summer: 80°F db / 50% RH

Pressure Relationships

The infirmary isolation area will require negative pressure.

Humidification

The project will not require humidification.

LEED Certification

The project will not be LEED certified.

Warranty

Provide 1-year warranty on all workmanship and equipment, unless otherwise indicated in the contract documents.

Testing, Adjusting and Balancing

The heating, ventilating and air conditioning systems will be tested, adjusted and balanced in accordance with AABC or NEBB Standards.

An independent third party, hired by Contractor, with AABC and NEBB certification shall perform all testing and balancing.

Owner Training

The HVAC and controls systems will be specified to include a set amount of owner training. Training will be provided by personnel from the installing contractor and/or equipment manufacturer. Training will be provided when the building is initially occupied, and after 12 months if necessary.

Project Area

Option 4.1: The project area is approximately 47,000 GSF.

Option 5.1: The project area is approximately 56,800 GSF.

Building Heating, Ventilation and Air Conditioning Systems

Air Handling System

The new air handlers includes:

- Ventilation, filtration, cooling coil and heating coil.
- Energy recovery wheel.
- VAV supply air fan with variable frequency drive.
- VAV return fan with variable frequency drive.
- Direct digital control (DDC) that is integrated into the existing building automation system.

Option 4.1: Each building will have roof mounted natural gas heat and refrigerant cooling air handling units.

Option 5.1: Each building use space will have an air handling unit with heating water and chilled water coils. Each type of space (housing, classroom, gymnasium, administration, etc.) will have its own air handling unit.

Heating (Option 5.1 only)

Source of Heating: High efficient natural gas modular boilers with N+1 capacity. Hydronic pumps will distribute heating water throughout the facility to air handlers and terminal heating devices

Cooling (Option 5.1 only)

Source of Cooling Air cooled water chillers with remote evaporators. Hydronic pumps will distribute chilled water throughout the facility to air handlers.

Variable Air Volume Zone Control

Variable air volume (VAV) air terminals with reheat will be provided within the project area for zone temperature control. All VAV terminals will have direct digital control. When a space is not being used, during the building unoccupied time, the VAV will be controlled to maintain setback temperature only.

Option 4.1: The reheat will be electric coils.

Option 5.1: The reheat will be hot water coils.

Each space will have its own VAV zone and thermostat. Open spaces will be zoned so that exterior and interior spaces are on separate zones. Similar type spaces with the space exposure may share a thermostat where practical.

Server and Data Rooms

Depending on internal heat gains, these rooms will be provided with a ductless split mechanical cooling system. The space temperature will be monitored by the building automation system.

Temperature Control System

Description

The facility will be provided with direct digital controls (DDC) that will be extended from and fully integrated with the existing Alpha building automation system currently on site. Web based network shall not be used to security reasons. It shall be connected to county local network only.

The system will have electronic room sensors with local set point adjustment ability within the parameters set through the DDC system computer terminal. The system will have the ability to "lockout" local user adjustment.

Levels of User Access shall be limited to: (1) Manager - read/write, (2) Operator - read/write, (3) Guest - read only.

Ductwork

All ductwork shall be galvanized sheet metal manufactured in accordance with SMACNA guidelines.

The building may include areas of exposed ductwork. Areas of exposed ductwork shall be constructed of paint grip galvanized sheet metal, suitable for painting by others.

All ductwork shall be sealed. Pressure testing and documentation of all pressure testing will be required on all ductwork and per Owners requirements.

Insulation

Piping, ductwork and equipment shall be insulated to minimum 2015 IEC standards including:

- Chilled water piping and accessories. (Option 5.1 only)
- Heating water piping and accessories. (Option 5.1 only)
- Supply air duct.

Heating of Non-Occupied Areas

These spaces include entries, corridors, storage rooms, mechanical rooms and similar areas.

(Option 4.1 only) These areas of the building will be heated by electric cabinet unit heaters, convectors or unit heaters.

(Option 5.1 only) These areas of the building will be heated by heating water cabinet unit heaters, convectors or unit heaters.

8.2.7 Electrical Systems

8.2.7.1 Renovation of MCAP Pods Scope of Work

Demolition Project Area

The area of project demolition does not include areas of demolition in mechanical or electrical spaces.

Demolition Scope of Work

The electrical demolition in this project includes:

- Removing all existing electrical lighting in MCAP detention cells.
- Maintain the existing electrical panels currently serving this space for reuse.
- Concept 5.1 Only - Removal and relocation of the existing emergency diesel generator, including the base tank. Existing generator pad will be demolished and the underground feed to the facility shall be reworked and possibly extended to the new location which is to be determined. Concept 4.1 shall maintain the existing generator as currently installed.
- Maintain the existing fire alarm system panels, notification appliance circuits, signal line circuits, and initiating circuits serving this space for reuse.

Renovation Project Area

The area of project renovation does not include areas of work in mechanical or electrical spaces.

Renovation Scope of Work

Electrical Work

This project will renovate the electrical systems in the areas described above. The existing electrical power distribution system will be maintained to serve new equipment and devices. This will include new branch circuit wiring as required.

Branch circuit wiring and associated devices and equipment will be provided for any new HVAC and plumbing equipment, and any architecturally specified/provided equipment.

New light fixtures and lighting control will be installed. All new light fixtures will be LED with 0-10 volt dimming capability. New lighting controls will include automatic shut off, consisting of local vacancy and occupancy sensors in common non-detention areas, the new loading dock, and other support spaces. Housing units shall be equipped with detention grade switches with override from relay controls. Control shall be accomplished via security system interface or separate lighting switchpate. Common areas with exterior fenestrations shall be equipped with daylighting controls

The existing fire alarm system will be modified/extended to the renovated areas.

Utility Service

No new utility services will be required.

The existing building electrical services are anticipated to be adequate to serve the new equipment and devices to be installed within the area of renovation.

8.2.7.2 New Facility Scope of Work

Codes and technical references

The electrical design will comply with the following codes:

1. 2018 Wisconsin Commercial Building Code
2. 2015 IBC
3. 2015 National Electrical Code
4. 2015 National Energy Conservation Code
5. NFPA
6. Americans with Disabilities Act
7. ACA

Tests by independent agencies whose classifications and requirements have general acceptance as regulatory:

1. UL
2. JIC
3. ANSI
4. NEMA
5. FM
6. ASTM
7. IES
8. IEEE

Conduits

Conduits will be intermediate metal conduit (IMC) or electrical metallic tubing (EMT) as allowed per code except as noted otherwise. Flexible metal conduit and liquid-tight flexible metal conduit shall be utilized for final connections to fixtures and equipment requiring a flexible connection.

PVC conduits shall be used in outdoor locations below grade and below floor slabs. The conduit for these installations shall be concrete encased. Conduit installed below building structure, roadways, service drives, and parking lots shall be installed in reinforced concrete.

IMC shall be used within concrete floors.

Conduits shall be intermediate metal conduit (IMC) in exposed areas below 10'-0" AFF and for the grounding electrode conductor.

All conduits shall be three-fourths-inch (3/4") minimum size unless noted otherwise.

Power System Wiring

All power and lighting system wiring shall be copper with THHN or THWN, 90 degree C insulation. Wiring size #8 AWG and larger shall be stranded. Wiring #10 AWG and smaller shall be either stranded or solid.

Communication and Special System Wiring

All low voltage wiring and raceways for communication and special systems shall be installed per Division 27.

Wiring Devices

Switching shall be toggle silent type.

All receptacles will be smooth face design. Ground fault interrupter devices will be used on the exterior and as required by the NEC indoors. Receptacle coverplates shall be either stainless steel or high-abuse Noryl with color as selected by the Architect. All devices shall be industrial specification grade.

All receptacles in detention areas shall be the security type with GFI protection on the device or via the circuit breaker feeding the device. Coverplates shall be detention construction with tamperproof screws, and 16 gage steel construction.

Power receptacles installed in the building exterior shall be provided with die-cast metal weatherproof "In-Use" covers.

Normal Power Distribution - Concept 4.1

The new facilities shall be fed from the utility company by a new 480 volt, 3-phase, 4-wire service.

The main service transformer will be utility owned and will be the pad-mounted type located near the Health and Dining Facility on the north side of the site. This equipment shall be located in an island area directly outside of the building on the unsecure side of the fence. Protective bollards will be installed surrounding the transformer in accordance with Utility Company requirements.

The 480 volt service from the transformer secondary will be connected to the main distribution switchboard located in a dedicated electrical space in the facility. The main distribution switchboard will be provided with surge protection and ground fault protection.

Utility metering space shall be provided on the facility exterior. Metering requirements shall be coordinate with the utility company. Customer metering will also be provided on the main switchboard and other switchboards and panelboards in accord with LEED measurement and verification guidelines.

Each standalone building will be fed from the main service via underground ductbanks. 480/277V distribution shall be utilized to minimize wire sizes and voltage drop. Each facility shall have an electrical room or rooms as required by the facility.

An emergency power distribution system will be provided as described in the following section.

The main switchboard at the electrical service entrance shall consist of the following:

- An incoming cable auxiliary section with a Utility approved metering compartment.
- Main molded case circuit breaker (fixed mounted) with adjustable trip unit and ground fault protection.
- Customer metering cubicle with CTs and PTs. A transient voltage surge suppressor and digital metering module also will be located in this section.
- Molded-case circuit breaker branch distribution sections. Breakers 600A and greater shall be adjustable trip type.

480-208/120 volt three-phase transformers will be located in remote electrical rooms to feed a low voltage distribution and branch circuit panelboards.

Branch circuit panelboards shall be circuit breaker type.

Transient voltage surge suppressors shall be located at all distribution panelboards and 120/208-volt panelboards serving electronic equipment.

The following voltages shall be used for the various systems:

Lighting:	277 volt
Lighting (Detention Areas):	277 volt
General Purpose Receptacles:	120 volts
Mechanical Equipment:	480 volts (3/4 hp and higher)
	120 volts (1/2 hp and lower)

The estimated connected normal power load for Concept 4.1 is determined by the following criteria:

Lighting - 47,091sf * 0.8VA/sf	63.0kVA
Receptacles - 47,091sf * 3.0VA/sf	141.27kVA
Miscellaneous Equipment - 47,091sf * 1.5VA/sf	70.64kva
HVAC- 47,091sf * 5.0VA/sf	235.46kVA
Elevators 1 @20hp	28.0kVA
Technology Equipment - 1,000sf * 80VA/sf	80kVA
Technology Room - Mechanical Equipment	100kVA
Subtotal	693.04kVA
Spare Capacity (20%)	138.6 kVA
Total	831.64 KVA or 1000 amps @ 480volt, 3-phase.

Service Size	1,000 amps @ 480volt, 3-phase
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Normal Power Distribution - Concept 5.1

The new facility shall be fed from the utility company by a new 480 volt, 3-phase, 4-wire service.

The main service transformer will be utility owned and will be the pad-mounted type. This equipment shall be located in an island area directly outside of the building on the unsecure side of the fencing. Protective bollards will be installed surrounding the transformer in accordance with Utility Company requirements.

The 480 volt service from the transformer secondary will be connected to the main distribution switchboard located in a dedicated electrical space in the facility. The main distribution switchboard will be provided with surge protection and ground fault protection.

Utility metering space shall be provided on the facility exterior. Metering requirements shall be coordinate with the utility company. Customer metering will also be provided on the main switchboard and other switchboards and panelboards in accord with LEED measurement and verification guidelines.

An emergency power distribution system will be provided as described in the following section.

The main switchboard at the electrical service entrance shall consist of the following:

- An incoming cable auxiliary section with a Utility approved metering compartment.
- Main molded case circuit breaker (fixed mounted) with adjustable trip unit and ground fault protection.
- Customer metering cubicle with CTs and PTs. A transient voltage surge suppressor and digital metering module also will be located in this section.
- Molded-case circuit breaker branch distribution sections. Breakers 600A and greater shall be adjustable trip type.

480-208/120 volt three-phase transformers will be located in remote electrical rooms to feed a low voltage distribution and branch circuit panelboards.

Branch circuit panelboards shall be circuit breaker type.

Transient voltage surge suppressors shall be located at 120/208-volt panelboards serving electronic equipment.

The following voltages shall be used for the various systems:

Lighting:	277 volt
Lighting (Detention Areas):	277 volt
General Purpose Receptacles:	120 volts
Mechanical Equipment:	480 volts (3/4 hp and higher)
	120 volts (1/2 hp and lower)

The estimated connected normal power load for Concept 5.1 is determined by the following criteria:

Lighting -56,637sf * 0.8VA/sf	45.47kVA
Receptacles - 56,637sf * 3.0VA/sf	170.51kVA
Miscellaneous Equipment - 56,637sf * 1.5VA/sf	85.26kVA
HVAC- 56,637sf * 5.0VA/sf	274.19kVA
Elevators 1 @20hp	28.0kVA
Technology Equipment - 1,000sf * 80VA/sf	80kVA
Technology Room - Mechanical Equipment	100kVA
Subtotal	793.42kVA
Spare Capacity (20%)	158.68 kVA
Total	952.11 KVA or 1146 amps @ 480volt, 3-phase.
Service Size	1,200 amps @ 480volt, 3-phase

Emergency Power System

Emergency power needs will be provided from an onsite emergency distribution system fed from a 600 KVA (Preliminary estimate only) standby rated diesel fueled generator.

The alternate power source will be Standby Emergency Power Class diesel engine generator set expected to provide power on an emergency basis for a short period of time (ie: less than 1,000 hours annually or less than 10,000 hours during the initial 10 years of operation). The 480Y/277-volt, 3-phase, 4-wire emergency power generator will be installed in a location as shown on the drawings.

An above ground fuel tank shall be provided supplying backup power for 72hours for compliance with NEC as a Critical Operations Facility (COPS). The generator shall contain an integral base tank in the skid portion of the generator with all pumps and controls.

All exit signs and egress lighting will be connected to an unswitched emergency lighting circuit in that area. Exit signs and egress lighting will be located along the designated egress paths as determined by the architectural layout.

Life safety egress illumination will include 25% of corridor and 50% of stairway illumination, plus 25% of assembly areas such as conference / classrooms. All electrical, communication, and mechanical rooms will have emergency lighting.

Based on final lighting design, fixture selection, and code compliance, battery powered emergency fixtures or wall mounted battery packs with adjustable dual LED heads will be provided in select areas to ensure security where a momentary power outage would compromise the security and safety of the facility.

Building heating equipment such as the electric preheat coils and electric reheat coils, air handling units, exhaust fans, and HVAC controls shall be connected to the emergency power system to allow heating and ventilation of the facility during an extended power outage.

The heating and air conditioning (cooling) systems for the Booking, Server Room, and Smoke Control Systems shall be connected to the emergency power system to allow complete heating and cooling of these areas during extended power outages.

Selected Lighting and Receptacles in other areas of the facility will also be connected to the emergency power system as directed by the Owner's representative(s). The following loads or areas are designated to receive emergency lighting and power:

- Booking Holding and Processing.
- Food Prep areas.
- Staff Break area.
- Administration area.
- Sergeants Office.
- Hallways.

Security systems and the fire alarm system will be connected to the emergency power system.

Transient voltage surge suppressors shall be located at all 120/208-volt emergency system panelboards.

One ATS will be provided for each NEC emergency or standby power system as applicable; Emergency, Legally required, or Optional Standby.

The following voltages shall be used for the various systems:

Emergency Lighting:	277 volt
Emergency Lighting (Detention Areas):	277 volt
Emergency Receptacles:	120 volts
Mechanical Equipment:	480 volts (3/4 hp and higher)
	120 volts (1/2 hp and lower)

The estimated connected emergency power load for Concept 4.1 is determined by the following criteria:

Lighting - 47,091sf * 0.5 VA/SF	23.55kVA
Receptacles - 47,091sf * 0.5 VA/SF	23.55kVA

Miscellaneous Equipment- 47,091sf * 0.5 VA/SF	23.55kVA
HVAC- 47,091sf * 2.5 VA/SF	117.73kVA
Elevators	28kVA
Technology Equipment	80kVA
Server Room Mechanical Equipment	100kVA
Subtotal	396.36kVA
Spare Capacity (20%)	79.27kVA
Total	475.64kVA or 572.4 amps @ 480volt, 3-phase
Generator Size	450 kw @ 480volt, 3-phase

Emergency distribution to each standalone facility shall be similar to the normal power distribution with the generator and transfer switches located at the Health and Dining building near the main service gear.

The estimated connected emergency power load for Concept 5.1 is determined by the following criteria:

Lighting - 56,837sf * 0.5 VA/SF	28.42kVA
Receptacles - 56,837sf * 0.5 VA/SF	28.42kVA
Miscellaneous Equipment- 56,837sf * 0.5 VA/SF	28.42kVA
HVAC- 56,837sf * 2.5 VA/SF	142.09kVA
Elevators	28kVA
Server Room Equipment	80kVA
Server Room Mechanical Equipment	100kVA
Subtotal	396.36kVA
Spare Capacity (20%)	87.07kVA
Total	522.42kVA or 629 amps @ 480volt, 3-phase
Generator Size	450 kw @ 480volt, 3-phase

Uninterruptible Power Systems (UPS)

A central UPS shall be provided to backup the following loads:

- Information Technology.
- Security Systems.

System shall be provided with a Maintenance Bypass Switch.

The estimated size based upon similar projects is from 30kw-60kw, 208-volt, 3-phase. System shall be of the parallel design and have the capabilities of future growth by 30kva.

Grounding

The main service will be grounded to a main service ground field established near the electrical space along with redundant grounding to the main water service and building steel as available. All grounding will conform to the requirements of the NEC.

All major equipment will be provided with a dedicated grounding conductor originating in the switchboard or panelboard supplying the equipment.

Receptacles and equipment will be provided with a green ground conductor originating in the panelboard supplying the equipment.

In Concept 4.1 each facility fed from the main service shall be grounded per NEC 250.32.

Motor Controls

Motor controllers for small (fractional horsepower) motors will be sized for the corresponding motor and will be provided with overload protection.

Manual motor controllers for larger single and three-phase motors will be sized for the corresponding motor and will be provided with overload protection, start/stop control, and a red status indicating light.

Combination motor controllers for single and three-phase motors will be sized for the corresponding motor and will be provided with a fused disconnect switch, contactor, solid-state overloads, a three position hand-off-automatic selector switch, and auxiliary contacts for interlocking with other equipment.

Motor controllers located inside the facility will be provided with enclosures meeting NEMA 1 requirements. Motor controllers located outside the facility exposed to the weather will be provided with enclosures meeting NEMA 3R requirements.

Circuit and Motor Disconnect Switches

Disconnect switches will be provided for equipment requiring local disconnecting means as per the NEC or in the interest of added safety. Switches will be the heavy-duty type, and will be either fused or non-fused to meet the application. Disconnect switches will be provided with enclosures meeting NEMA 1 requirements for indoor applications and NEMA 3R for outdoor applications.

Interior Lighting

All light sources shall be via energy efficient LED light sources.

Exit signs will be the LED type to reduce energy and maintenance costs. Die-cast aluminum housings will be provided in non-secure areas, and detention grade steel housings will be provided in detention and booking areas.

A general summary of the lighting levels is in the following table:

LIGHTING LEVELS		
AREA	AMBIENT	TASK
	LUX (FC)	LUX (FC)
Lobbies	100 (10)	500 (50)
Corridors	50 (5)	
Private Offices	300 (30)	500 (50)
Open Offices	300 (30)	500 (50)
Waiting Areas	100 (10)	500 (50)
Conference Rooms	300-500 (30-50)	
Class Rooms/VoTech	500 (50)	
Lounge Areas	100 (10)	500 (50)
Office Support	300 (30)	500 (50)
Storage Rooms	100 (10)	
Mechanical Rooms	300 (30)	
Restrooms	50 (5)	Higher
Electrical Rooms	300 (30)	
Holding Areas	200 (20)	200(20)
Booking	400 (40)	500 (50)
Food Prep	500 (50)	Higher
Dining/Visitation	500 (50)	
Health	500 (50)	1000 (100)
Gymnasium	700-1000 (70-100)	
Vehicle Sallyport	300 (30)	

Lamps: The majority of lighting will be 277-volts and utilize LED lighting sources with 0-10V dimming drivers. LED exit fixtures will meet the performance requirements in ETL-1110-3-432. Interior fixture color temperatures shall be 3500K in all spaces except for housing areas that will incorporate a 3000K Color temperature.

The following are proposed as the standard light fixtures for various room types:

- Private Offices, and Break Rooms – will be 2 x 4 LED recessed Volumetric troffers with 4800 lumen output for ambient lighting and under cabinet LED task lighting at desks as required to meet task light level requirement.
- Conference Rooms – will be direct/indirect 90% up / 10% down LED pendant mounted lighting with supplemental recessed 3" x 4' LED fixtures wall washing fixtures at markerboard locations. Lighting controls will be provided with

various preset scenes. Pendant mounted lighting shall have aluminum housings.

- Toilet Rooms – Wall mounted surface LED Vandal Resistant lights will be used over the mirrors. Supplemental Recessed LED downlight fixtures will be used for where needed for additional illumination.
- Public Spaces – will be special lighting appropriate to architecture, utilizing LED fixtures as required.
- Corridor Lighting, Waiting Areas – 2 x 2 recessed LED, Volumetric direct / indirect troffer fixture with LED sconce lighting and recessed 3” x 4’ LED fixtures wall washing where architecturally appropriate and required.
- Lighting in Mechanical Penthouse, Electrical Closets, Telephone Closets, and Unfinished Spaces – will be surface or pendant mounted LED Industrial fixtures with symmetric reflectors, and acrylic lens.
- Lighting in General Areas – will have 2’ x 2’ recessed LED Panel Fixtures with 4000 lumen output.
- Storage Rooms, Mechanical, Electrical, and Communications Rooms – 1 x 4 LED surface or pendant mounted strip light with symmetric reflector and Acrylic lens.
- Lighting in Booking Areas – Recessed, or Surface mounted Vandal-Resistant light fixtures will be provided in Booking, and circulation areas.
- Detention Housing Areas will have Minimum (18 gage housings) security type recess mounted light fixtures will be provided in all holding, and dormitory areas, and have composite polycarbonate and prismatic acrylic lenses with UV absorbing overlays.
- Where accessible by residents ALL light fixtures shall be detention grade and shall meet ligature-resistant requirements.
- Inmate accessible classrooms, exams rooms, etc. will have LED vandal resistant fixtures matching the ceiling types.
- Gymnasium – LED high bay vandal resistant fixture with impact resistant acrylic lens. Minimum efficacy of 100lum/watt and color temperature of 3500K.

Exterior Lighting

Exterior lighting systems will be designed to satisfy the local codes regarding footcandle level, uniformity, glare, and spillover onto adjacent property. Lamps will be high color rendering LED with a 4000 degree K color. With the exception of the parking lot luminaires and spotlights, all lamp watt ratings shall be 100 watts or less to minimize glare and hot spots.

Parking lot luminaires shall utilize LED light sources with watt ratings of 400 watts or less. Drivers for exterior lighting systems shall be electronic. Exterior drivers shall be rated for a -20 degree F start.

Pole mounted area luminaires will be selected to match architectural features of the building. Overall pole/foundation height shall not exceed 35 feet.

Wall mounted sconces with an up and down distribution shall be installed to provide walkway illumination at the entry.

Building exterior lighting, consisting of decorative/functional sconces and/or wall brackets will be selected to compliment the design of the building in both style and color.

Accent and/or floodlighting may be provided to establish a nighttime image, enhance exterior design elements, or for security purposes.

Exterior egress lighting will also be provided near each exit.

Exterior lighting will contain IES full cutoff optics to minimize light pollution in accordance with Dark Skies recommendations.

Lighting Controls

Lighting within office, staff, public, and administrative areas shall be via local occupancy sensors where such controls do not impact the security of the facility or the occupants.

Open office areas, corridors, lobbies, atria, and other common spaces will employ networked, room controllers with manual overrides, and vacancy sensing control. Daylight harvesting controls will be provided in areas with code defined daylighting zones.

Lighting in the holding area shall be controlled via low voltage relays. Control shall be accomplished via security system touchscreens, or via separate lighting switch plates. Manual controls will have pilot light indicators.

Exterior lighting will be controlled via photocell and astronomical time clock controlled low voltage relays.

All lighting controls will be designed to meet the National Energy Policy Act and the International Energy Conservation Code.

Wall box dimming with scene control of different zones of lighting will be used in conference rooms and other special areas as required by the Users.

Fire Alarm System:

The fire alarm system will be a microprocessor based, addressable type system to minimize wiring and expedite installation and provide the maximum flexibility. Recommend utilizing Siemens to interface with the existing Vel Philips system.

Sprinklers will have dedicated flow and supervisory switches per sprinkler zone for alarming and monitoring functions respectively.

Fire alarm initiation devices will consist of manual pull stations at all exits and in interior locations as required by code. Smoke detection will consist of code-required detection of mechanical systems, elevator retrieval, electrical rooms, and additional detection in locations warranting early detection.

Each initiating device (i.e., smoke detectors, manual pullstations, duct detectors, etc.) will be individually addressed for alarm and trouble point location at the fire alarm panel.

ADA strobe/speaker devices will be installed throughout the facility. One each strobe shall be provided for fire and one for other emergency conditions. Evacuation/Notification system shall comply with NFPA requirements for a Mass Notification System.

A remote annunciator will be provided at the main entry of the facility for fire department use.

The fire alarm system will automatically dial the Wauwatosa Fire Department Central Station via a digital alarm communications transponder provided with the fire alarm system.

Pre-action sprinkler systems provided per the Fire Protection System design shall be connected to the Fire Alarm system monitoring alarm, supervisory, and trouble conditions.

8.2.8 Security Electronic Controls Systems (SECS)

8.2.8.1 Renovation of MCAP Pods Scope of Work

Demolition Scope of Work

- Remove all security endpoints (door control, cameras, duress alarms, housing control station) off the current Security System.
- Physically remove all old technology and their accompanying wiring.
- Remove existing control station desk.

Renovation Scope of Work

Renovation of the MCAP Pods requires adding it to the new proposed Security System for the new facility as stated below. With the new MCAP system endpoints being controlled by the new system. They will include, but not limited to, cameras, door control, duress alarms, intercoms, paging, watch tour, etc.

A new control station desk will also be required. This should take up a much smaller square footage of space than the current station. The new technology will utilize touchscreens for control and monitoring of all security system aspects located within the MCAPS Pods.

MCAP's new security system will also need new infrastructure or network backbone to connect back to the head end of the Security Electronics system located in the new facility.

8.2.8.2 New Facility Scope of Work

Building a new facility for the SRCCCCY will require a new Security Electronic Control System. The existing on site facilities security system is using older, out of date technology that does not lend itself to being expanded upon. Our recommendation would be to build the new facility, and if located on the site of the current facility, then

when funds are available to update the security system at the existing facility. At that point you would be able to integrate the two “new” security systems and create one security system that encompasses the entire compound.

Our design is based on the simplest of systems to allow for minimal input from the operator and to maximize efficiency and control of the Security Electronic Control System (SECS). This level of efficiency allows the operator greater time to focus on important issues as they arise.

A new integrated SECS is built on the foundation of the communications backbone, and four major sub-systems that integrate into a (HMI) Human Machine Interface. The four major sub systems include Graphical User Interface - GUI; Video Surveillance System; Intercommunications System, and Proximity Access Control System. Efficient human interface with the separate sub-systems is achieved by integrating the separate systems and all associated system end points through a Programmable Logic Controller - PLC. LAN and Serial communications between these systems create a virtual system response to events that are programmed to trigger alerts and/or communication with the system operator(s), relieving the operator(s) from having to interpolate system data, allowing them to focus on the event rather than the system. At its most basic level, each major sub system is a network appliance and an Ethernet application. Utilizing the dual physical star backbone communications infrastructure, the security sub systems communicate and are thus integrated into a single user interface. The human interface with the system is a touch screen application. The touch screen provides a consolidation of system data for the user to monitor and control. All remote control functions are carried out using this interface; all local control, such as use of the proximity access control, is monitored via the touch screen. All alarm and event data is presented to the operator through the graphical touch screen user interface (GUI). The PLCs used are designed for factory floor applications and thus not prone to failures or system downtime. The PLC is used to monitor all the system endpoints and execute all the system commands. As the most fault tolerant component of the system, and heart of the operation, it is well suited for this purpose as it will not allow a fault to inadvertently unlock or open a door without a command to do so.

While the above description describes the 4 main sub-systems to the SECS, there are other systems that also integrate with the PLC operation making up the full SECS package. These include, but are not limited to, Duress Alarms, Guard Tour, Utility Control, Intrusion detection, and other ancillary systems and devices, which are all to represent onto a single HMI. These systems were described in the Bridging documents and will be provided in the final design.

Drone detection is also part of the design but may not be integrated into the overall SECS.

Description of how the integration software will facilitate the integration of the SEC sub-systems:

Software integration is accomplished using an open architecture, non-proprietary approach. That is to say that an off the shelf development tool, Wonderware, will be used to develop the screen layouts and icon animations on the screens that the operator will react to. The software will be created without the use of virtual black boxes such as executable files. An executable file uses compiled code that encrypts the system programming making it difficult for a third party to service it in the future.

When ready for commissioning, the software will be sent to the manufacturer of the development tool for an audit. The manufacturer will review the software created and determine if it contains any executable files or other programming that renders the package proprietary. Anything found to be proprietary will be remedied by the integrator prior to commissioning the system. The actual integration will be accomplished through the use of APIs (Application Programming Interface) allowing each manufacturers sub system to communicate with the others. The use of Touch Screen Human Interfaces, or HMI's, simplify the ability to report, identify, and respond to the required actions of the facility's security staff. The HMI provides a single user interface with all the security related systems so that the operators only need to learn and become proficient with one system reducing training and easing transition. This design encourages staff cross training, and the ability to react to short staffing due to weather emergencies or other conditions that would require staff to work in posts other than their normal assignments. The access control system will integrate into the HMI system similar to the other major sub-systems. The access control endpoints or field devices will be wired so that the HMI can override the normal operation in times where high security is warranted. In that case, the system would work more like the remote control system in the detention part of building. When the conditions are returned to normal, the system can, with one touch of an icon, be returned to normal as well. Integration again means that all of the sub-systems are applied through the HMI so that the operator sees the video surveillance system as an integrated part of the security control system. Selecting a camera for viewing is as simple as selecting an icon on the touch screen HMI and seeing the video from that location automatically displayed on a dedicated call up monitor. In a standalone system the officer would have to select a camera by number or by name off of a pull down menu tree and drag or double click it to a display window. The HMI is much more intuitive for the operators. The systems integration also allows what is known as "video follow". Video follow functions are designed to let the operator focus on the events in the facility rather than focus on the system. If an alarm is generated, the associated video is automatically displayed. If an intercom link is established, the video from the remote station location is automatically displayed. Thus allowing the operator to skip the step of interpolating locations into camera numbers which also requires inputting those numbers into the system under high stress conditions; saving precious seconds in response time during an emergency.

Intercommunications System

The intercom system will be an integrated part of the security electronics system. The system is known as an exchange based VoIP system. This is a way of saying "distributed intelligence". The benefit to this type of system is a significant reduction in the amount of conduit and wire required for complete connectivity. The reduction comes from locating the intelligence throughout the facility in security closets near the high concentrations of stations in the building. These exchange stacks can be duplicated anywhere on the campus and connected via the LAN.

Integration of the intercom system provides a level of efficiency that non-integrated systems are in-capable of. When integrated, the calling station is displayed by an animated icon on the touch screen display. Simply touching that icon on the screen will connect the operator with the remote station; when the operator does this, it activates the communication line, putting the operator in listen mode, meaning they can hear the remote end, but the remote end cannot hear the operator. The "one way at a time" communication is called half duplex, and allows the operator to maintain full control of the link deciding who talks and who listens. Using the Graphical User Interface to control the intercom system, means that the operator immediately knows

where the remote station is physically located, without having to interpolate a station number or a text locator. Thirdly, the integration means that if the caller is requesting access through a secure portal, the operator can see where they are and decide whether or not to grant access. This feature is automatic, again not requiring the operator to think about the station number or location and then remember or look up what camera might be able to see that station or portal. All of this is automated so that when the operator selects an intercom station on the GUI, which establishes a link, the surveillance system automatically pulls up the appropriate camera on the monitor, which displays a visual of the person who pushed the remote call button. At that point, the operator can simply select the appropriate “door” icon on the GUI, granting access to the caller.

A paging speaker system is also capable of integrating with this system. Paging zones are selected via the touch screen GUI and the desk top mic is used to make voice announcements. The paging speakers are also capable of telephone system interface so that by selecting a specific extension, a voice page can be initiated from a telephone instrument.

Access Control System (ACS)

Similar to the intercommunications system, most access control systems are designed with distributed intelligence. The use of access control nodes located at the portal is not uncommon. This provides a system that is not dependent on the communications circuit to operate. Once the nodes are loaded with the information from the access control database, they will operate as a network device unless the network system goes down. In that event, the nodes check credentials against their internal memory, until the network is back up in operation and the nodes are refreshed with any database changes.

The credentials carried by staff will be proximity type cards with photo IDs laminated to them. The credentials can be augmented with biometrics or PIN codes in the future if the end points have those capabilities added.

Video Surveillance System (VMS, CCTV)

The surveillance system is an IP based video management system.

Similar to the intercom and access control systems, the architecture is distributed. This again means that instead of having to run wiring from every camera location on campus back to a single location as with the legacy analog systems, we can now simply route the endpoints to the nearest communications closet and connect them to the LAN.

Beyond traditional fixed image, the design will include the use of multi-image/360 degree/Panoramic IP cameras. This helps system optimization by diminishing the total number of cameras, cable, and camera licenses required, along with installation fees and installation time. The high definition images of today’s CCTV cameras require large amounts of storage to save the required/programmed amount of video data. This large storage demand is mitigated through the use of video analytics programmed within the video management system, allowing higher definition recording to be based on movement, and using lower definition recording when there is no movement or events triggering the system. Image size and the number of images per second to be recorded are the main system parameters that impact the amount of storage used and they must be considered in balance with the amount of storage capacity available.

Video images will be displayed on desktop monitors. If the owner desires wall mounted CCTV monitors those may also be provided. Display locations will be designed for ergonomics and reduction of fatigue for the operators.

PLC - GUI

The primary components of the SECS are the Programmable Logic Controller or PLC and the touch screen computers and monitors. These are the tools that allow the integration and automation of the other sub-systems into a single user interface.

The most important design element of the touch screen HMI is the use of color. Saturated colors are reserved for events, alarms and other priority changes of state. The saturated colors are used against a muted white or light gray background. In this configuration, a flashing red icon stands out to the operator and is easily detected.

“Traffic Signal” colors also contribute to the intuitive nature of the HMI. Red means stop, yellow means caution, and green means go. Today’s society understands this use of color, so rather than changing it, so that the operator has to learn a new meaning for each color, we align them and use the same colors with similar meanings. Red means alarm or stop; this is the highest priority color and it means stop and address this event. Yellow means caution; we use this to address things like interlocks or isolated devices. When a door in an interlock zone is selected to be unlocked, all other doors in that zone are highlighted in yellow on the GUI so that the operator understands that those doors cannot be unlocked/opened without overriding the interlock function. The interlock function aids in the compartmentalizing of personnel movement in inmate areas. Green is a non-security color as is blue; these cooler colors are used for intercom and surveillance because they do not affect the security level of the facility, the purpose and functionality of those systems are considered aids for security officers.

Next to color in referring to level of importance, is the “One, Two, Three” rule. Meaning, “One” touch functions cannot change the security level. This includes intercommunications, surveillance, utility controls, and other officer “aide” type functions. If a one touch icon is selected accidentally or maliciously, it will not affect the security level or allow a breach in operation. Door control is a “Two” touch function. This means in order to process a door control command, the specified door icon must first be selected by “One” touch, then a function icon such as open or unlock must be selected with a “Second” touch before the action takes place. This process mitigates accidental un-locking of doors at the GUI. “Three” touch functions on the GUI are reserved for override commands. For example, we will always design a Sally Port to be an interlock zone as an added measure to prevent inmate escape, in the event that the sally port must have two doors open for a fire hose, the interlock of those doors must be overridden. This type of function requires a minimum of “Three” touches at the GUI.

As previously mentioned, the PLC is designed for factory floor applications and thus not prone to failures or system downtime. The PLC is used to monitor all the system endpoints and execute all system commands, making this the “heart” of the system. As the most fault tolerant component of the system, it is well suited for this purpose as it will not allow a fault to inadvertently unlock or open a door without a command to do so. The written logic of the PLC system is the communication link that makes the multi-system automation described possible.

Associated with the PLC in level of importance, are the Touch Screen GUI and associated computer. The level of animation of the icons, use of color, logic, etc. discussed above is programmed into the touch screen CPU using development tools that allow incorporation of custom backgrounds and icon animations. This CPU is the “brain” of the integrated system.

Where applicable and desired, the use of small handheld (portable) tablets will be designed for use of control and monitoring of video surveillance cameras.

Included in this system design is “Transaction logging.” Transaction logging uses a database computer that tracks and records every system change of state including icons and endpoints. This allows for a high level of forensic information to be made available for investigators in the event it is needed for incidents within the facility.

Together with the specified screening capabilities in the public and receiving areas, the overall system design would provide the facility with the correct level of security, control and flexibility to address staffing levels, security levels, both outside and within the facility, and confidence in the ability to manage the facilities level of security.

The systems described above are the basic building blocks of a state of the art correctional control system. How each system will be implemented will be determined based on the policies and procedures of the institution. Technology is used to enhance the safety, security and efficiency of the staff rather than the staff adapting their policies and procedures to the technology.

8.2.9 Telecommunications

8.2.9.1 Renovation of MCAP Pods Scope of Work

Demolition Scope of Work

Existing telecommunications cabling located in areas slated for demolition shall be removed in their entirety. This shall include removal of outlet, jacks, and cable between outlet and telecommunications closet.

Renovation Scope of Work

Renovation of existing building, minimum system requirements-

- New telecommunications outlets in renovated area. Quantities, infrastructure requirements, and standards to follow those outlined below for new construction.

8.2.9.2 New Facility Scope of Work

Information technology systems (structured cabling systems) shall adhere to the following standards-

Codes and Regulations

System design will comply with the following codes and standards, latest edition as adopted by Milwaukee County:

- National Electric Code
- National Fire Protection Association
- American National Standards Institute
- National Electrical Manufacturers Association
- American Society of Testing Materials
- Institute of Electrical and Electronic Engineers
- Underwriters Laboratory
- Americans with Disabilities Act
- Federal Communications Commission
- Electronics Industries Association
- Telecommunications Industry Association
- Building Industry Consulting Services International
- Existing Milwaukee County Standards

Information Technology Systems will be installed as complete functioning systems. Systems will include:

- Structured cabling infrastructure including but not limited to
- 120VAC power
- Conduit
- Back boxes
- Cable tray
- J-hooks
- Telecommunications Grounding network
- Horizontal cabling
- Work area outlets including jack and faceplate
- Patch panels
- Backbone Copper and fiber optic backbone cabling network
- Backbone cable terminations
- Telecommunications closet layout
- Communication duct bank
- Equipment racks, cable management

Infrastructures shall be configured to accommodate future modifications and upgrades required for support of future technologies.

Back bone and incoming services support shall consist of the following configurations. The existing backbone cabling needs are comprised of fiber optic cable for support of data and unified communications, copper twisted pair cabling for support of voice services, and coaxial cable for CATV distribution.

Renovation of existing building, minimum system requirements-

- Cabling infrastructure including cable tray and conduit will be required between the existing building equipment room and new telecommunications closets.
- New fiber optic cable between existing building equipment room and new telecommunications closets.

- New copper back bone cabling between existing building equipment room and new telecommunications closets.
- New CATV back bone cabling between existing building equipment room and new telecommunications closets.
- New telecommunications outlets in renovated area. Quantities, infrastructure requirements, and standards to follow those outlined below for new construction.

Construction of new building minimum system requirements-

- Duct bank comprised of (2) 4" conduits, partitioned using 1 ¼' inner duct. 36"x36"x36" or larger hand holes, spaces at 100' intervals maximum. Fed from Vel R Phillips.
- Typical wall telecommunications outlet comprised of (2) gang 3 ½" deep box with single gang trim ring. 1" conduit (sized for maximum of (3) cables) routed to above accessible ceiling.
- J-hooks utilized in 5' intervals for support of cable between conduit and tray above accessible ceilings. Continuous conduit utilized for support of cable above fixed or secure ceilings.
- Basket type cable tray routed above accessible ceilings in corridors.
- Partitioned power/communications floor box/poke thru with 1 gang opening for mounting and termination of telecommunications connectivity.
- Conduit sleeves between stacked closets in accordance with Industry standard.
- Horizontal conduits between closets on the same floor.
- Flexible inner duct between closets for support of fiber optic cable.
- Standard compliant telecommunications grounding network.

A minimum of two telecommunications closets per floor are required.

Telecommunication closets will be identified and located so all horizontal telecommunications cabling falls within industry guidelines for distance and total cable length is limited to 295'. Closet walls will be covered with 4'x8' fire treated plywood sheets mounted horizontally 24" aff to the bottom of the sheet. Plywood will not be painted. Cable ladder will be installed around perimeter of room and across the top of all cabinets. Vertical cable ladder is required for all vertical cable routing. Closets shall be void of any plumbing including hot and cold water pipes, valves, drains, etc. Condenser pipes for support of telecommunication room cooling units shall be routed in such a manner as to limit their presences in the room, and when required to be routed thru the closet located away from the equipment rack/cabinets and wall mounted equipment. Closets will be dedicated and not shared with mechanical, electrical, or janitorial services. Placement of telecom closets adjacent rest rooms should be avoided. Minimum size of telecommunications closet will be 10' x12'. Closets will be stacked vertically. Closet footprints do not need to stack exactly, but sufficient overlap is required to assure vertical cable pathways from floor to floor. Sealed concrete floors are required. Finished ceilings are not required. Cooling shall be accomplished using dedicated split system configured to operate year round. Cooling shall be sized based on active heat load for LAN, Phone, and security electronics equipment housed within the space. Initial heat load shall be a minimum of

10,000 BTU/Hr. Power shall include (2) dedicated 120VAC/20 Amp and (1) Single Phase 30 Amp twist lock outlets per rack. Additional service outlets shall be required, one receptacle per wall. Dedicated 120VAC/20 amp circuits for security and CATV distribution electronics. (1) dedicated 120VAC/20 Amp and (1) Single Phase 30 Amp twist lock for DAS electronics. With exception of service outlets, all power shall be on generator and UPS backup. Quantity of two post equipment racks sufficient for housing fiber optic shelves, horizontal patch panels, and cable management. Racks shall accommodate one two space network switch for each patch panel. Size to accommodate a minimum of 25% growth with all equipment mounted a minimum of 24" off. Racks shall be 19" wide and 72" tall. 6"x6" vertical cable management required on both sides of racks.

Minimum system performance characteristics:

- Inter-building OSP fiber optic backbone - OM4 (10 Gb/s/100 Gb/s). Distances up to 400 m.
- Inter-building OSP fiber optic backbone - OS1 (100 Gb/s.). Distances greater than 400 m.
- Intra-building ISP fiber optic backbone - OM4 (10 Gb/s/100 Gb/s.)
- Horizontal multi-pair cable - Category 6a/Class Ea UTP (500 Mhz.) Minimum 20 year performance warranty certified by manufacturer will be required. Tripp-Lite cable and connectivity used as basis of design.

Minimum Backbone Requirements-

- Inter-building
 - OSP fiber optic backbone - Minimum of 48 strand armored direct burial cable between existing building main distribution facility and new building main distribution facility.
 - RG-11U Coaxial Cable between existing building main distribution facility and new building main distribution facility.
- Intra-building
 - ISP fiber optic backbone - Minimum of 24 strand fiber optic cable installed between main telecommunications closet for building and all intermediate telecommunications closets. Additional 24 strand fiber optic cable to be run between intermediate closets on same floor. All fiber to be installed in inner duct.
 - RG-/11U Coaxial Cable between building entrance and all telecommunications closets.

Horizontal cabling needs. Minimum drop count per telecommunications outlet shall be two. Outlet location needs:

- Private Office - (2) telecommunications outlets.
- Open Office Workstation - (1) telecommunications outlet.
- Class rooms - (6) telecommunications outlets.
- Computer lab - (1) drop per student desk, (4) service outlets.

- Bedroom – (1) telecommunications outlet.
- Conference Spaces (6-12 person occupancy) – (3) telecommunications outlets.
- Meeting/Training/Multi Purpose Rooms (Occupancy over 12 person) – (6) telecommunications outlets.
- Wireless Access Points (based on 50' diameter spacing) – (2) telecommunications outlet per point.
- Copy Print – (3) telecommunications outlets.
- Medical/Dental spaces- as required for support of medical and dental equipment needs.
- Building Support (mechanical/electrical spaces) – (2) telecommunications outlet per room.

Coaxial CATV distribution system shall be comprised of amplification, splitters, tap-offs, cable, and CATV outlets. Input shall be by owner. All splitters and tap-offs will be made in the telecommunications closet. Each telecommunications closet shall be equipped with a bi-directional amplifier. No field tapping. CATV outlets required in administrative offices, public lobbies, conference spaces, classrooms, meeting/training/multi-purpose rooms, lounges, and bedrooms. RG-6U cable, typical of runs up to 100'. RG-11U typical of runs over 100'.

A dedicated telecommunications grounding network will be included. Originating at the facility main electrical ground, the grounding network will extend to the main distribution facility tying to a wall mounted grounding bus bar. Grounding conductors will extend from the main grounding bus bar to grounding bus bars in all intermediate distribution facilities. Grounding conductors are required for connection between all bus bars and the telecommunications equipment racks/cabinets, cable tray, building steel, telecom conduit pathways, and local electrical panel.

Telecommunications exclusions/owner furnished and installed equipment-

- All network hardware required for support of the LAN including switches, routers, hubs, and network storage hardware.
- Telephone system including desk sets, patch cables, and system head end.
- Wireless access points.
- Desktop workstations.

Owner Training

The electrical systems will be specified to include a set amount of owner training. Training will be provided by personnel from the installing contractor and/or equipment manufacturer. Training will be provided when the building is initially occupied, after 3 months of occupancy, after 6 months, and after 12 months (if necessary) of occupancy.

Equipment Sizing Note

Where equipment sizes, airflows, tonnages, etc. are indicated, they are CONCEPTUAL only and will be confirmed or revised as the design progresses.

Drawings and Narrative

Design drawings and narrative shall complement each other and should both be considered part of the design package.

8.2.10 Audio / Visual

8.2.10.1 Renovation of MCAP Pods Scope of Work

Demolition Scope of Work

The project will not require demolition.

Renovation Scope of Work

Provide audio/visual presentation system for new classroom. Systems requirements and standards to follow those outlined below for new construction.

8.2.10.2 New Facility Scope of Work

Audio/visual presentation systems shall adhere to the following standards-

Codes and Regulations

Systems design will comply with the following codes and standards, latest edition as adopted by Milwaukee County:

- National Electric Code
- National Fire Protection Association
- American National Standards Institute
- National Electrical Manufacturers Association
- American Society of Testing Materials
- Institute of Electrical and Electronic Engineers
- Underwriters Laboratory
- Americans with Disabilities Act
- Federal Communications Commission
- Electronics Industries Association
- Telecommunications Industry Association
- Building Industry Consulting Services International
- National Systems Contractors Association
- AVIXA
- Existing Milwaukee County Standards

Infrastructures shall be designed to accommodate future modifications and upgrades required for support of future technologies. Infrastructures required shall include-

- 120VAC power
- Conduit
- Back boxes
- Mounting suspension supports
- Motorized projection screens
- Equipment cabinets

Minimum system infrastructure requirements-

- Wall Mount Displays – Multi partitioned back box with support of power, data, and AV connectivity. Multiple conduit knockouts ranging from $\frac{3}{4}$ " to $1\frac{1}{4}$ ". Sized to accommodate locally mounted distribution and conversion hardware. 60% spare conduit capacity.
- Ceiling Mount Projectors - Multi partitioned back box with support of power, data, and AV connectivity. Multiple conduit knockouts ranging from $\frac{3}{4}$ " to $1\frac{1}{4}$ ". Sized to accommodate locally mounted distribution and conversion hardware. 60% spare conduit capacity.
- Input panels – Deep multi gang back boxes with multiple conduit capacity. Sized for 30% spare capacity. 60% spare conduit capacity.
- Equipment cabinets – Wall mount sectional cabinets. Equipped with power control and distribution, cooling, and cable management. Sufficient depth for mounting of systems electronics. 30% capacity for extra growth. 60% spare conduit capacity.

Minimum System performance standards-

- Wall mount video displays – 4k resolution, 430 cd/m2 brightness, 1,000,000:1 contrast ration. HDMI, computer, RF, and component video input connectivity. 10Base-T/100Base-T LAN termination. 20 watt stereo speakers. 178 degree viewing, all angles. Viewing image calculated using 1/6 rule to furthest viewer.
- Video projectors – 4k resolution, DLP technology, 10,000:1 contrast ratio, and 4500 lumens. HDMI, computer, RF, and component video input connectivity. 10Base-T/100Base-T LAN termination. Viewing image calculated using 1/6 rule to furthest viewer.
- Sound Reinforcement – Frequency response 100 Hz – 14 kHz +/- 3 dB throughout the seating area. Variation in SPL of +/- 3 dB, a weighted. ALCONS 10% or better.
- Signal distribution – 4k60 4:4:4 video over standard gigabit Ethernet. Supports HDR10 and HDCP 2.2. JPEG 2000 video compression. Multi-channel audio up to 8-channel LPCM or encoded HBR 7.1. 100 to 990 Mbps bit rates. RTP, RTSP, and SDP streaming protocols.
- Ethernet Communications – 10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL,

TLS, SSH, SFTP, IEEE 802.1x, IPv4, Active Directory authentication, variable Multicast TTL, HTTPS web browser setup and control.

Audio/Visual systems shall be provided for support of the following spaces and applications-

- Classrooms
- Computer labs
- Conference spaces
- Meeting/Training/Multi-purpose rooms
- Lobby/Public gathering spaces

Systems shall be comprised of technologies capable of visual presentation, audio reinforcement (both voice and program), and integrated control. When applicable, network based technologies shall be used for distribution of video signal, audio processing, and control communications.

Classroom/Computer Labs

Video presentation systems comprised of interactive smart board with video projector. Primary Input hardwired from Instructors workstation. Additional hardwired input capabilities for other owner furnished devices. Wireless video presentation capabilities. Voice lift audio reinforcement system comprised of ceiling mounted speakers and wireless microphone. Accommodations for program audio reinforcement also. Basic integrated control system capable of system power, source selection, and volume adjustment.

Conference Spaces (Capacity up to 6 with maximum viewing distance of 10')

Video presentation system comprised of wall mount flat panel display. Display fed from table top input connectivity. Speaker integral to displays used for program audio reinforcement. Infrared hand held remote used for control of display.

Conference Spaces (Capacity up to 12 with maximum viewing distance of 15')

Video presentation system comprised of wall mount flat panel display. Display fed from table top input connectivity. Wireless video presentation capabilities. Speaker integral to displays used for program audio reinforcement. Basic integrated control system capable of system power, source selection, and volume adjustment.

Conference Spaces (Capacity up to 16 with maximum viewing distance of 20')

Video presentation system comprised of wall mount flat panel display. Display fed from table top input connectivity. Wireless video presentation capabilities. Speaker integral to displays used for program audio reinforcement. Basic integrated control system capable of system power, source selection, and volume adjustment.

Meeting/Training/Multi-purpose Rooms

Video presentation systems comprised of large format ceiling mounted video projectors with motorized projection screen. Multiple video input locations capable of feeding HDMI/VGA signals to the projector. Conversion to twisted pair between input and projector. Wireless video presentation capability. Video switching to be provided

allowing user to selected intended source for display. Audio reinforcement comprised of overhead speaker systems, amplification, and digital signal processing. Voice audio input capabilities for hardwired and wireless microphone systems, as well as program audio reinforcement. Integrated control system comprised of touch screen control interface with control of power, source selection, audio level control, and screen control. In applications where rooms are divisible, each individual space shall have its own presentation system, audio reinforcement system, and touch screen control interface. Room shall be configured to function as independent standalone systems, or combined to operate as larger systems. Presentation podiums provided for each space equipped with microphone and video input connectivity.

Lobby/Public Gathering Spaces

Lobby and public gathering spaces shall be equipped with wall mount flat panel informational displays. Display shall include programmable media player and software for user initiated and designed content.

Televisions

Wall mount televisions shall be provided for all dayrooms, lounges, and recreation spaces.

9. PROJECT BUDGET

9.1. Budget Detail

The following budget recommendations are based on the systems descriptions and conditions described in this report including the estimated schedule. There were two concepts developed for this feasibility study, Concept #4 and Concept #5, both of these concepts included renovation of two MCAP housing pods in the existing Vel R. Phillis detention center.

The budget recommendations are based on the following assumptions

- All work is done as a single prime and in a single phase with the construction start and finish per included schedule.
- Contractor is expected to meet the Milwaukee County DBE requirements.
 - 25% DBE & TBE participation
- All loose furniture part of FFE including purchasing and installing is by Owner. A line item has been included in project budget summary.
- All data and security work including cabling, equipment and switching is the contractor's responsibility.
- All We energies utility work is the contractor's responsibility to coordinate, but the final cost of new services will be paid for out of an allowance held by the contractor. (Allowance is To Be Determined)
- All permits and fees including DNR stormwater management fees are responsibility of contractor and included in their Bid.
- Renovation of the MCAP pods will have to be done in a secure correctional setting, requiring a secure tool setting.
- Budget recommendation do not include asbestos abatement or environmental clean of contaminated soils.
- Budget recommendations do not include accounting for existing soils with poor bearing capacity.

The Estimated Project Budget are as follows:

- Concept 4.1 = \$41,572,201.15
- Concept 5.1 = \$45,397,735.52

Opinions of probable construction costs presented within the context of this report are prepared on the basis of Consultant's experience and qualifications and represent Consultant's judgment as a professional generally familiar with the industry. However, since Consultant has no control over the cost of labor, materials, equipment, or services furnished by others, over contractor's methods of determining prices, or over competitive bidding or market conditions, Consultant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Consultant's opinions or estimates of probable construction cost.

See Appendix I for breakdown of cost estimate.

Milwaukee County SRCCCY / Vel R. Phillips Site			
Estimated Project Budget Summary			
Concept 4.1			December 26th, 2018
COMPONENT		COST	NOTES
Site Acquisition costs		\$ -	County-owned location
Concept 4.1		\$ 23,627,076.00	
MCAP Renovations		\$ 6,456,508.00	
Loading Dock Relocation		\$ -	
Added Classrooms		\$ -	
New Parking Structure		\$ 3,770,000.00	260 stall parking structure on site
Construction Cost Subtotal		\$ 33,853,584.00	
Construction Contingency	8.5%	\$ 2,877,554.64	
A&E fees	8%	\$ 2,708,286.72	
other fees	0.3%	\$ 101,560.75	
FF&E	6%	\$ 2,031,215.04	
ESTIMATED TOTAL PROJECT COST		\$ 41,572,201.15	

Milwaukee County SRCCCY / Vel R. Phillips Site			
Estimated Project Budget Summary			
Concept 5.1			December 26th, 2018
COMPONENT		COST	NOTES
Site Acquisition costs		\$ -	County-owned location
Concept 5.1		\$ 26,910,113.00	
MCAP Renovations		\$ 6,456,508.00	
Loading Dock Relocation		\$ 383,219.00	
Added Classrooms		\$ -	
New Parking Structure		\$ 3,219,000.00	222 stall parking structure on site
Construction Cost Subtotal		\$ 36,968,840.00	
Construction Contingency	8.5%	\$ 3,142,351.40	
A&E fees	8%	\$ 2,957,507.20	
other fees	0.3%	\$ 110,906.52	
FF&E	6%	\$ 2,218,130.40	
ESTIMATED TOTAL PROJECT COST		\$ 45,397,735.52	

APPENDIX

- Appendix A: Loading Dock Relocated
- Appendix B: SRCCCY OPR
- Appendix C: Concept 4.1
- Appendix D: Concept 5.1
- Appendix E: Concept 4.1 Utilities
- Appendix F: Concept 5.1 Utilities
- Appendix G: Turning Radius
- Appendix H: MCAP Pod Modifications
- Appendix I: Cost Estimate

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